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The Journal of the Department of Agriculture of Victoria, Australia.

December, 1924.

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CONTENTS.—DECEMBER, 1924.

		PAGE
Fertilizers and the Fertilizer Industry (continued)	*P. Rankin Scott and Will C. Robertson*	705
Text-books on Agriculture		715
Apricot Growing	*W. H. Nicholls*	716
A Gardening Book		724
Control of Woolly Aphis	*C. French, jun., and L. Pilloud*	725
Marketing Turkeys	*W. C. Rugg*	728
Wheat and Its Cultivation (continued) ...	*A. E. V. Richardson, M.A., D.Sc.*	730
Standard Herd Test, 1924-25—Report for September Quarter		743
Errata—Standard Herd Test, 1923-24		761
Honey as Food		761
Orchard and Garden Notes		764
Reminders for January		766

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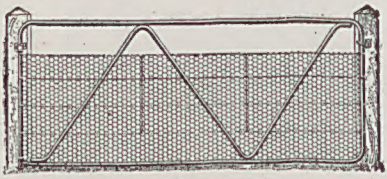

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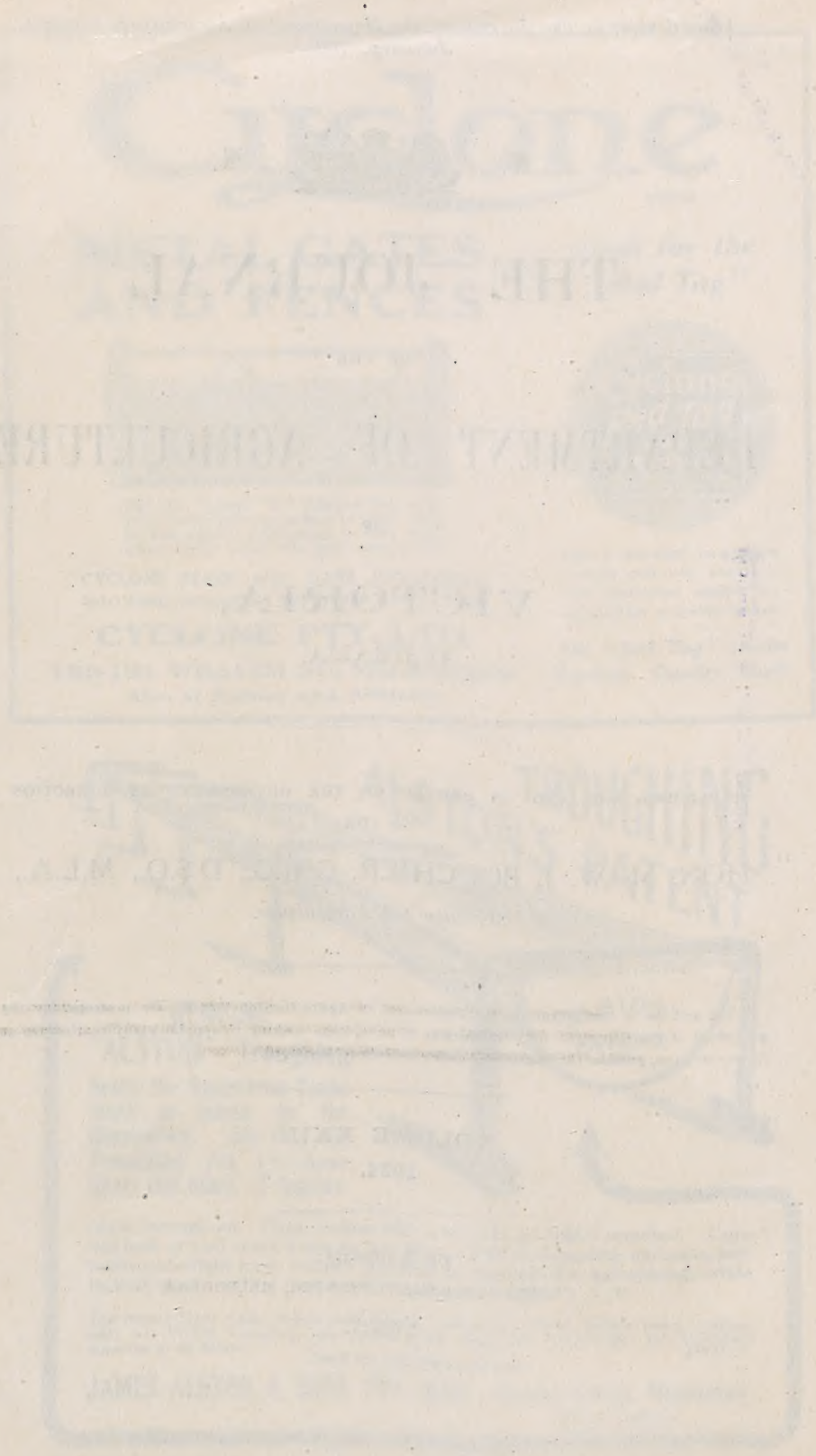

THE JOURNAL OF THE DEPARTMENT OF AGRICULTURE, VICTORIA.

VOLUME XXII. Parts 1–12.

INDEX.

	Page
Adam, D. B.—	
Cool Storage of Fruit	577
Almond-growing—Notes on	313
Ampelographical Notes	615
Apiculture—	
Hives and Frames	692
Honey as Food	764
Apples—	
Bitter Pit	583
Cool Storage Experiments	578
Glassiness, or Water Core	584
Internal Breakdown	581
Jonathan Spot	580
Woolly Aphis	725
Apricot Growing—	
Cultivation	643
Irrigation	643
Manuring	722
Planting	641
Propagation	474
Pruning	716
Situations	478
Varieties	477
Apricots—Experiments in Cool Storage of	586
Artichokes for Pigs	245
Artificial Fertilizers. *See* under Fertilizers.	
Bartels, L. C.—	
Irrigation Experiments at Maffra	37
Maffra Crop Competitions	502
Warracknabeal Crop and Fallow Competition	342
Bee-keeping	692
Beet Competition, Maffra	502, 506
Beet Industry in Victoria	322
Beet Industry—Why it should be Encouraged	325
Bethune, A. W. —	
Clean Milk	699
Beuhne, F. R.—	
Bee-keeping	692
Birds—Protection of	379
Bitter Pit	583
Book-keeping, Farm	591
Books on Agriculture	715
Brittlebank, C. C.—	
Tomato Diseases	433
Brittlebank, C. C. (and Castella, F. de)—	
Oidium of the Vine	98
Bull—	
Necessity for Good	527
Selection and Care of	58
Value of	170
Bunt in Wheat	459
Castella, F. de—	
Some Ampelographical Notes	615
Castella, F. de (and Brittlebank, C. C.)—	
Oidium of the Vine	98
Castella, F. de (and Cock, S. A.)—	
Verdelli, or Summer Lemons	703
Cattle—	
Bull—Testing proves	13
Bull—Value of	170
Foods—Mineral Matter in	632
In-Breeding and Line Breeding	60, 94
Necessity for Good Bull	527
Necessity for Proper Feeding	527
Standard Herd Test—	
Errata, 1923-24	761
Report—	
December Quarter, 1923	172
March Quarter, 1924	361
Year, 1923-24	513
June Quarter, 1924	743
Testing—Is it worth the cost?	5
Testing in Gippsland	6
Testing Proves the Bull	13
Yield more Urgent than Beauty	534
Cherry Aphis—Spraying for Control of	644
Chicken Pox	113
Citrus—	
Browning or Spotting	586
Cool Storage Experiments	585
Summer Lemons	703

Page

Clinton, H. F.—
Ducks—Breeding and Management of 372
Poultry Parasites 624
Cock, S. A. (and Castella, F. de)—
Cool Storage of Fruit 577, 633
Verdelli, or Summer Lemons . 703
Cotton-Growing Experiments .. 688
Cream Tests—Why they Vary.. 443
Crooked-breasted Turkeys .. 728
Crop, &c., Competitions—
Dookie 158, 303
Elmore 296
Goroke 348
Maffra 502
Murrayville 77
Nhill 208
Numurkah 350
Rupanyup .. 291, 425
Shepparton 84
Warracknabeal 342
Crop Rotation 387
Curlewis, A. W.—
Sheep Dip Platform or "Tip" 109
Dairying—
Bull—Care of 59
Bull—Testing Proves .. 13
Culling 523
Disadvantages in Victoria .. 518
Facts Favouring 513
Gippsland Dairying .. 5
How Schools could Help .. 533
Lesson from Denmark .. 525
Milking—Hints on 60
Necessity for Good Bull ..58, 527
Necessity for Proper Feeding 527
Testing in Gippsland .. 6
Testing—Is it worth Cost? .. 5
Yield more Urgent than Beauty 534
Dookie Crop Competition .. 158
Dookie Fallow Competition .. 303
Drift of Population to City .. 531
Ducks—Breeding and Management of 372
Elmore Crop, &c., Competition . 296
Fallowing Methods—Dookie and Goulburn Valley 162
Farm Book-keeping 591
Farm Devices—
Bone Manure Pit 710
Hoppers (Dry-meal) for Pigs. 183
Sheep Dip Platform .. 109
Farmers' Field Day, Longerenong College 43
Fertilizers, Artificial—
Animal, Manufacture of 679, 705
Blood and Bone Manufacture 681
Bone Dust 707
Dried Blood 706
Effects of Phosphates on Crop Growth 261
Experiments in Goulburn Valley 93

Page

Fertilizers, Artificial—*continued.*
Experiments at Longerenong 44
Farm-Made Bone Manure Pit 710
Fertilizers and the Fertilizer Industry .. 679, 705
For Tobacco 479
For Top-Dressing Pastures .. 263
For Wheat.. 399
List of those Registered for 1924 47
Manurial Problems .. 395
Mixing of 414
Superphosphate Experiments, Longerenong 44
Time to Apply to Pasture .. 266
Fodder Plants and Grasses—Native 193
Forest Insects of Australia .. 76
Forristal, T.—
Farm Book-keeping .. 591
French, C. (and Pilloud, L.)—
Control of Woolly Aphis .. 725
Fruit Fly, Mediterranean .. 427
Fruit—Cool Storage Experiments 577
Fruit—Refrigeration of .. 633
Fruit Pests —
Cherry Aphis 614
Fruit Fly, Mediterranean .. 427
Geelong Farm Competition .. 21
Gippsland (South) Dairying .. 5
Gippsland Method of Herd Testing 6
Gill, A. J.—
A Profitable Little Farm .. 307
Bull—Selection and Care of.. 58
Mineral Matter in Cattle Foods 632
Pigs—Cost of Rearing and Fattening 701
Sheep—Feeding of 111
Goroke Fallow Competition .. 348
Government Cool Stores—New Packing Installed 575
Grafting Apricots 477
Grasses and Fodder Plants—Native 194
Grasses—Introduced 199
Grass Land—
Depletion of Soil in Mineral Nutrients 196
Development of .. 193, 257
Effect of Phosphates .. 263
Relation between Composition of Soil and Character of Herbage 259
Top-dressing of .. 201, 257, 263
Hay-stack Building Competition—Geelong 231
Maffra 231
Hepburn, J.— 502, 507
Refrigeration To-day as Applied to Fruit 633

Page

Herd Test Associations in South Gippsland 5
Herd Test Association Work—Equipment Required .. 20
Herd Averages—Standard Test, 1923-24 543
Herd Test Movement—Value of 19
Herd Test—Order in Merit .. 549
Herd Testing—Uniform Scheme—Regulations 545
Herd Test Standard—Errata, 1923-24 761
Report—
December Quarter, 1923 .. 172
March Quarter, 1924 .. 361
Year, 1923-24 513
June Quarter, 1924 .. 743
Hives, Bee 692
Honey as Food 761
Incubation Experiments .. 511
Insects, Useful—Protection of. 379
Irrigation Experiments at Werribee 37
Irrigation of Apricots .. 643
Johnstone, C. J. R.—Cotton-growing Experiments . 688
Kerr, J. M.—Standard Herd Test Report, 1923-24 513
Lemons, Summer 703
Leongatha Dairy Farm Competition 241
Line Breeding 60, 94
Longerenong College Field Day 43
Lucerne Competition, Maffra .. 501
Lucerne, Irrigation Experiments at Werribee 37
Lucerne—When to Cut .. 504
Maffra Crop and Competitions.. 502
Maize Competition, Maffra .. 503
Mangels—Storing of 623
Manures. *See* Fertilizers.
Manurial Problems 395
Manuring of Wheat 399
Marks, G. E.—Production and Flue-Curing of Tobacco .. 435, 479
Mediterranean Fruit Fly .. 427
Mendel's Law of Heredity .. 651
Milk—
Effect of Light on 308
Factors in Production and Despatch 699
Food Value of, for Children.. 631
Skim, for Bread-making .. 309
Milking—
Quick *v.* Slow 310
Some Hints on 60
Mineral Matter in Cattle Foods 632
Mullett, H. A.—
Dookie Fallow Competition.. 303
Elmore Crop Competition .. 296
Geelong Farm Competition .. 21

Page

Mullett—H. A.—*continued.*
Hay-stack Building Competition, Geelong 231
Murrayville Crop Competition 77
Nhill Crop Competition .. 208
Numurkah Crop Competition 350
Rupanyup Crop Competition 291, 425
Shepparton Crop Competition 84
Murrayville Crop and Fallow Competition 77
McFadzean, J. S.—
Leongatha Dairy Farm Competition 241
Line Breeding—An Example of 94
Value of a Bull 170
McKenzie, R. T.—
Milking—Some Hints on .. 60
Why Cream Tests Vary .. 443
McTaggart, R. S.—
Goroke Fallow Competition .. 348
Nhill Crop and Fallow Competition 208
Nicholls, W. H.—
Apricot-Growing .. 474, 641
Numurkah Crop, &c., Competition 350
Nuttall, J.—Farm of 17
Oidium of the Vine 98
Oranges—
Browning and Spotting .. 586
Experiments in Cool Storage 584
Orchards—Poultry in .. 186
Parasites, Poultry 624
Pastures—
Depletion of Soil in Mineral Nutrients 196
Deterioration of 195
Development of 193
Effect of Phosphates .. 261
Experiments in Fertilizing .. 257
Relationship between Composition of Soil and Character of Herbage 259
Top-dressing of 201
Pea-nut Growing 314
Peaches—
Cool Storage Experiments .. 587
Trial Shipment of 588
Pears—Trial Shipment of 577, 589
Pederick, W. O. (and Rugg, W. C.)—
Incubation Experiments ... 511
Poultry Feeding Experiments 420
Pigs—
Artichokes for 245
Breeding for Pork and Bacon 115
Hoppers, Dry-meal .. 183
Rearing and Fattening, Cost of 701
Pilloud, L. (and French, C.)—
Control of Woolly Aphis .. 725
Protection of Useful Insects .. 379

Page

Potatoes—
Grading, Expeditious .. 576
Irrigation of 355
Manuring Trials .. 415, 508
Catani 416
Korumburra 417
Thorpdale 417
Trentham 418
Millbrook 508
Immature Seed *v.* Ripe Seed Test 511
Selected Seed Test 511
Varietal Seed Test 510

Poultry—
Breeding Stock—Treatment of 243
Chicken Pox 113
Egg-Laying Competition, 1923-24, Report 326
Feeding Experiments (Free Choice, Dry Mash, Wet Mash) 420
Incubation Experiments .. 511
In the Orchard 186
Parasites 624
Small Eggs—Danger of .. 327
Turkeys—Marketing .. 728

Ramsay, J. T.—
Expeditious Grading of Potatoes 574
Potato Production under Irrigation 355
Results of Potato Manuring Trials, 1923-24 .. 415, 508

Refrigeration of Fruit .. 633
Rhubarb Culture 635

Richardson, A. E. V.—
Development of Grass Lands 207, 257
Treatment of Wheat for Smut 224
Wheat and its Cultivation 65, 129, 271, 385, 449, 600, 645, 730

Robertson, W. C. (and Scott, P. R.)—
Fertilizers and the Fertilizer Industry .. 679, 705

Rugg, W. C.—
Burnley Egg-Laying Competition, 1923-24 326
Chicken Pox 113
Poultry in the Orchard .. 186
Treatment of Breeding Poultry Stock 243
Turkeys—Marketing of .. 728

Rugg, W. C. (and Pederick, W. O.)—
Poultry Breeding (Incubation) 511
Poultry Feeding Experiment 426

Rupanyup Crop Competition .. 291
Rupanyup Fallow Competition. 425
Salt for Dairy Cows .. 311

Page

Scott, P. Rankin—
Artificial Fertilizers Registered for 1924 47

Scott, P. Rankin (and Robertson, W. C.)—
Fertilizers and Fertilizer Industry 679, 705

Sheep—
Dip Platform or Tip .. 109
Feeding on Crushed Oats and Chaff 111
Feeding on Silage 112

Shepparton Crop, &c., Competition 84
Silage for Sheep 112
Skim Milk for Bread-Making . 309

Smith, Temple A. J.—
Tobacco Industry in America 165, 238, 287

Smut in Wheat 224

Stack-Building Competition—
Geelong 231
Maffra 503

Stacking, Wheat 473
Stallion Parades, 1924 .. 247
Stallion Registration, Annual Report 282
Stallion Register, 1923-24, Part III. 117

Standard Herd Test—
Report—
December Quarter, 1923 .. 172
March Quarter, 1924 .. 361
Year, 1923-24 513

State Research Farm—
Irrigation Experiments at .. 37
Stinking Smut in Wheat .. 459
Sugar Beet Competition .. 502
Sugar Beet Industry 321
Testing, Herd, in Gippsland .. 8
Text-Books on Agriculture .. 715

Tobacco-Growing—
Barn-curing 482
Bulking 496
Cultivation 441
Curing 482, 492
Fertilizers 479
Flue-curing 489
Grading 497
Harvesting 486
Hygrometer, making of .. 500
Insects, Combating 481
Plants, Raising of 438
Preparation of Land .. 437
Soils 435
Suckering 442
Topping 442
Transplanting 439
Varieties 501

Tobacco Industry in America 165, 238
Tobacco Industry in Australia .. 287
Tomato Diseases 433
Tomatoes Tested for Resistance to Disease 434

	Page
Top-dressing Pastures	201, 257
Tractors—Fallowing with	427
Tuberculosis—Control of	1
Turkeys—Marketing	728
Verdelli, or Summer Lemons	703
Viticulture—	
Oidium of the Vine	98
Planting and Reconstruction of Vineyards	306
Some Ampelographical Notes	615
Wallace—Farm of	307
Walnut-growing—Notes on	313
Ward, J. M.—	
Mediterranean Fruit Fly	427
Warracknabeal Crop, &c., Competition	342
Water, Tank, Purifying of	315
Wheat—	
Agricultural Methods—Progress of	271
Bare Fallow—Limitations of	278
Breeding of	647
Bunt, or Stinking Smut	459, 602
Copper Carbonate for Smut Preventive	223, 224
Crop Rotations	387
Cropping, Systems of	273
Crossbreds, New, Tests at Carwarp	302
Development of Plant	139
Diseases	164, 459, 600
Early and Late Sowing Experiments at Longerenong	44
Fallowing in the Mallee	82
Flag Smut	603
Fungoid Diseases	601
Harvesting	466
Wheat—*continued.*	
Improvement	645
Insects Injurious to Stored Grain	608
Loose Smut	602
Manurial Problems	395
Mildew	606
Pickling	222
Rotation Experiments, Longerenong	45
Rotation with Pasture, Fallow, &c.	279
Rust	607
Seeding Operations	449
Smut—Fungicidal Tests	227
Sowing	455
Stacking	473
Stinking Smut	459, 602
Structure of Plant	139
Superphosphate Experiments, Longerenong	44
Take-all	605
Varieties	451, 472, 739
Varieties Grown in Victoria	732
Wheat Belt Soils	129
Wheat and its Cultivation	65, 129, 271, 385, 449, 600, 645, 730
World's Wheat Fields	66
Whey and Skim Milk for Bread Making	309
White Ants in Orchard	704
Williams, M. F.—	
Control of Tuberculosis	1
Williams, W. L.—	
Sugar Beet Industry	321
Woolly Aphis	725
Yuill, N. J.—	
Herd Test Association	5

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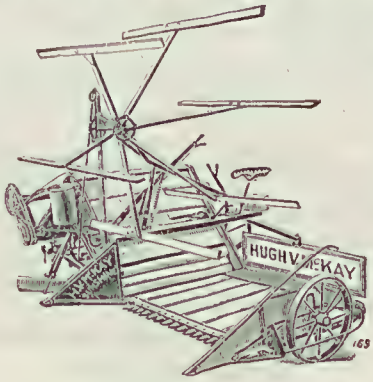

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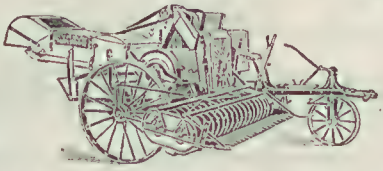

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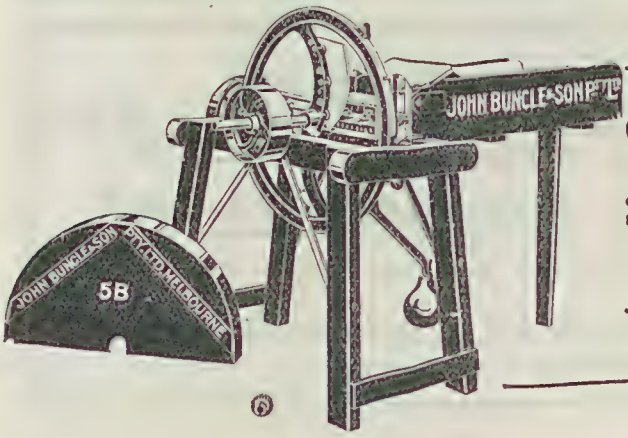

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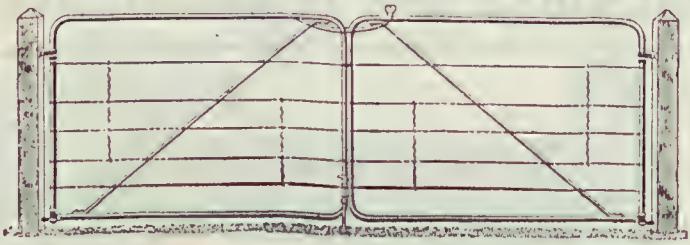

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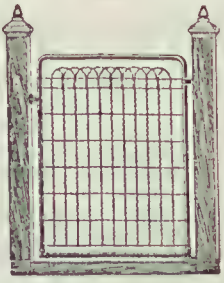

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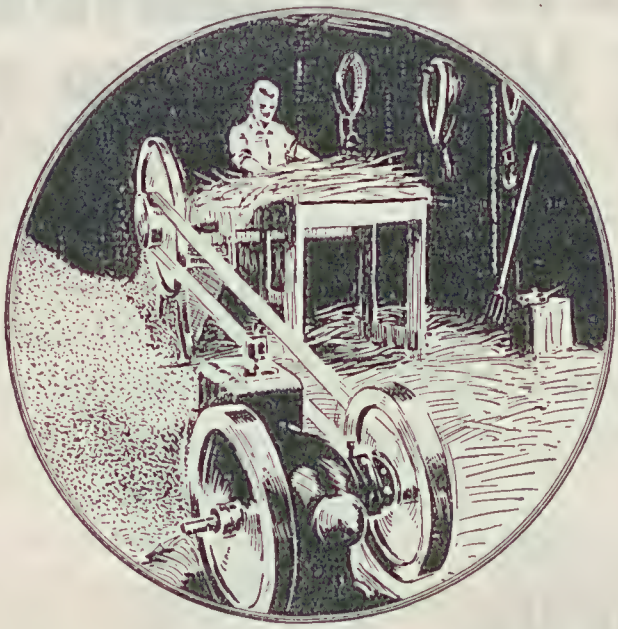

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Vol. XXII. December, 1924. Part 12.

NATIONAL MUSEUM MELBOURNE

FERTILIZERS AND THE FERTILIZER INDUSTRY.

(Continued from page 687.)

By P. Rankin Scott, Chemist for Agriculture, and Will C. Robertson, Supervising Analyst.

Animal Fertilizers—*continued.*

Dried Blood.

Artificial fertilizers very highly valued by those who specialize in intense culture, particularly market gardeners, are "dried blood" and "blood manure." They are manufactured at the various freezing works and by fertilizer plants installed to treat abattoir refuse.

"Dried blood" is, as the name implies, a fertilizer produced by the simple process of drying "neat" liquid blood. "Blood manure," on the other hand, is the product of the desiccation of liquid blood mixed with the contents of the paunches from the animals slain.

Manufacture.

"Dried blood" and "blood manure" are prepared in a manner similar to "bone and blood" manures, excepting that the digesting operation is dispensed with, and in most cases there is no necessity for a grinding mill.

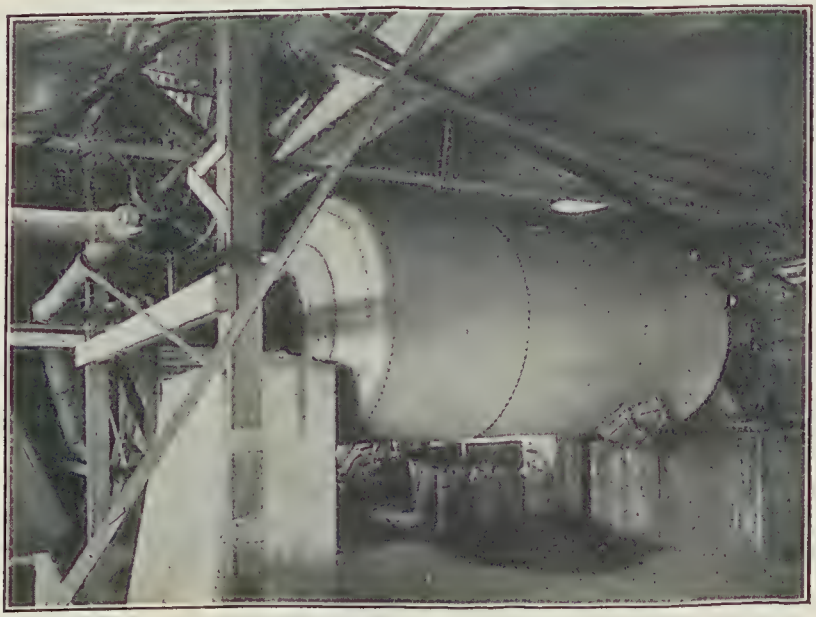
"Neat" raw blood from slaughtered beasts contains approximately 88 per cent. of water, 11 per cent. of organic matter, and 1 per cent. of ash. The content of nitrogen is 1.6 per cent., and small amounts of phosphoric acid and potash are always present.

The liquid blood is collected in casks or iron barrels at the slaughter-yard, and conveyed to the revolving "dryer." The latter machine is exactly similar to that already described in the manufacture of "bone and blood." The "dryer" is charged with the fluid blood and set in motion. The result is the contents slowly lose moisture, and then coagulate and dry. A small amount of coagulating agent is sometimes

added to accelerate drying. Usually the substance employed is superphosphate, and this also assists in preventing the contents of the "dryer" from caking.

The drying operation takes some hours, during which the fluid blood loses approximately 70 per cent. of its moisture, and is discharged from the "dryer" as a hot, semi-dry, dark-brown mass, in a more or less powdery condition. On exposure to normal temperature the hot semi-dry blood loses more moisture until the final product contains from 14 to 18 per cent. of water. This is the recognized economical standard for moisture in dried blood. When the fertilizer contains higher amounts of moisture it is inclined to "sweat," and thereby lose nitrogen with a corresponding decrease in value.

It should be stated, however, that "dried blood" is not a good manure to store, for it has a tendency to slowly lose nitrogen in the form of ammonia.



Modern Revolving Dryer.

Practice shows that while it is possible to reduce the moisture by prolonged "dryer" treatment to 10 or 12 per cent., or even lower, it is inadvisable, firstly, because the extra cost involved is not set off by the increased concentration, and, secondly, there is a danger of "burning" the blood and thereby losing some of the valuable fertilizing element—nitrogen.

The advent of the steam-jacketed "dryer" has been a boon and blessing to manufacturers of animal fertilizers, but more particularly to the manufacturers of dried blood and blood manure. The new method does away with the obnoxious odours and tedious handling associated with coagulation and evaporation from boilers or sun-drying, and at the same time produces a better article. . . .

For use as a fertilizer the blood as discharged from the "dryer" is ready for the market, although in isolated instances it is subjected to a rough grinding and screening prior to being bagged. This latter operation reduces the moisture content still further.

"Dried blood" is fairly regular in composition, usually containing from 16 to 20 per cent. of moisture, and from 10 to 11.5 per cent. of nitrogen, with probably ½ per cent. of phosphoric acid and a similar amount of potash. It contains upwards of 70 per cent. of organic matter which decomposes readily in the soil to form humus.

Blood manure contains approximately 15 per cent. of water, 8 per cent. of nitrogen, 1 per cent. of phosphoric acid, and ½ per cent. of potash. The content of organic matter would be somewhat lower than the case of dried blood. In "dried blood" and "blood manure" the nitrogen exists in the organic form, but there is always a trace of ammonia present.

In the preparation of dried blood as a fowls' food, only fresh neat blood is employed, and the drying is prolonged, in some instances, to reduce the moisture content.

Being artificial fertilizers within the meaning of the Fertilizers Act, it is essential that each and every bag or package containing "dried blood" or "blood manure" which is sold or exposed for sale should have a label affixed clearly guaranteeing the contents.

The following label illustrates the correct method of labelling:—

Manufactured in Victoria.

BROWN & Co.,

FREEZING WORKS—MILL ROAD, GEELONG

"Bestever" Brand DRIED BLOOD

Containing NITROGEN as Blood 11%

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Every purchaser of these fertilizers must likewise be tendered a signed invoice certificate at the time of sale or before delivery of any part thereof, coinciding with the particulars on the label and covering the total quantity sold. "Dried blood" may be sold as a poultry food without any of the restrictions.

The approximate annual output of "dried blood" and "blood manure" in Victoria is 3,000 tons.

Bonedust.

There are more than twenty bonedust mills situated in Melbourne or dispersed through the countryside of Victoria. One factor only prohibits the number of mills being largely increased, and that is the high cost of transport.

In the large cities and towns where extensive "green" bone contracts are to be obtained, and the outlook for a fairly constant supply

of raw material justifies the expenditure necessary for the organization of transport facilities, the matter of successfully establishing a bonedust factory may be regarded as hopeful. On the other hand, in country districts where the raw material has to be collected and transported over a wide area either by road or rail, and where the chance of

Small Digester in a Country Mill.

(Note the crude method of retaining heat by covering the digester with bags.)

obtaining "casual" raw material in the shape of dead beasts at an economical cost is very meagre, the proposition of bonedust manufacture is far from alluring. Incidentally, it should be mentioned that the labour required for the trade is of a special nature and a problem in

itself. It is safe to say that many thousands of tons of bones and animal matter are annually wasted in the State owing to the high cost of transport and operations associated therewith precluding the installation of treatment works.

As bonedust is mainly a phosphatic fertilizer, and the average Victorian soil shows a marked deficiency in phosphoric acid, it follows that any waste of this essential fertilizing compound must be regarded as serious. One must recognize that the phosphoric acid contained in bones is obtained from the mineral content of the grasses and fodder grown on the soil. Even with the increased phosphatic manuring in recent years, and the growing use of superphosphates for the top-dressing of grass lands, it is essential, from a national standpoint, that wherever it can possibly be avoided, there should be no waste of unused phosphoric acid in the form of bones.

Filling Digester with Crude Material.

Inquiries are continually being made in reference to bonedust manufacture and erection of bone-mills. In almost every instance the proposition comes to an end when the question of obtaining sufficient raw material at reasonable cost is discussed.

In the years gone by it was quite the regular thing to save all the bones from the household until the "bone-man" called, but in recent times this systematic collection does not exist, consequently a large quantity of valuable raw material is consigned annually to incinerators or rubbish tips of the cities and towns, or is left lying about the homesteads and paddocks in the country.

As the larger municipalities sent an official around in a vehicle on a weekly visit to all householders for the purpose of collecting rubbish from the privately-owned receptacle, it may be possible to organize a system whereby household bones, waste meat, &c., would be placed in a separate container supplied for the purpose. A system of this description would guarantee a steady supply of raw material which could be treated at existing central works.

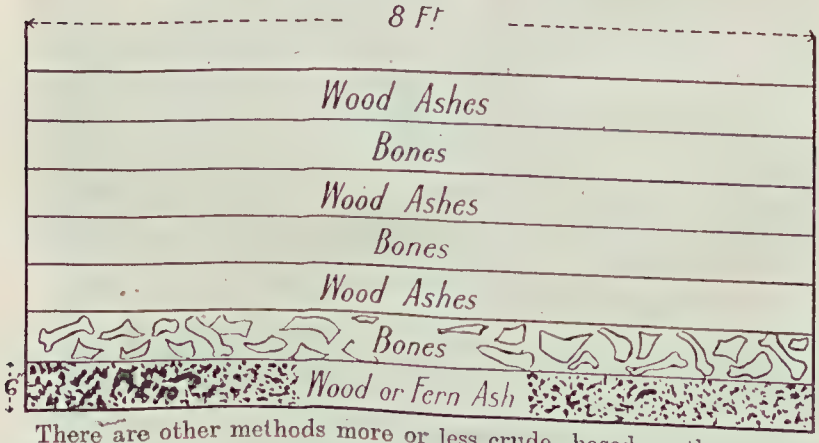
In the country, however, there must of necessity be a deal of waste bones unless the farmer takes advantage of the many admirable methods of making bone manure on the farm. The following method of treating small quantities of bones which is said to have originated in Russia is recommended:—

In a trench 4 feet deep by 8 feet long and 3 feet wide, bones are placed between layers of wood or fern ashes (fresh), each about 6 inches thick. The lowest and uppermost layers are of ashes, and each layer is saturated with water as soon as it is laid. Upright stakes are set in the trench at intervals of 2 feet at the beginning, but are withdrawn in 8 or 10 days' time. Into the holes left by the withdrawal of the stakes sufficient water is poured to saturate the ashes anew.

At the end of two months, when the bones have become considerably softened, the heap should be turned over, moistened, and allowed to ferment again. Probably another forking may be necessary before the bones are found to be thoroughly disintegrated. Usually thorough disintegration takes five months. Some of the larger bones, such as those from the thigh and head, may not be thoroughly disintegrated, and should be placed aside for re-treatment with the next lot. The pit on being emptied will disclose a fine mass of bone and ashes—if semi-moist it will readily dry— and is ready for use.

The accompanying sketch will illustrate the mode of procedure.

"FARM-MADE" BONE-MANURE PIT



There are other methods more or less crude, based on the same principle, any of which will turn bones into a fine state of division, and at the same time increase their solubility. In all cases, however, there is a loss of nitrogen, as the heat of fermentation drives off the ammonia formed.

If 5 hundred-weight of bones be mixed in a heap with 10 hundred-weight of fine earth, and the whole saturated and kept moist with urine or liquid manure from the stables, the bones will in time be completely disintegrated.

If bones be placed in a pit in layers of 3 inches alternated with layers of 12 inches of horse manure, and the whole topped with a layer of 6 inches of loam, a fertilizing mixture fit for use will be produced in ten months. The bones should be soaked in water prior to

being placed in the pit, and each layer of both bones and horse manure should be thoroughly moistened with water or liquid manure as it is put down. The loss of ammonia (nitrogen) may be appreciably lessened by closely covering the heap or pit with peat or superphosphates, and keeping the temperature down as much as possible.

The mixture from pits of this description provide a bone manure eminently suitable for top dressing at a very low cost. The analysis of 'farm-made" bone manure will, of course, vary with the treatment, but one would expect the decomposed article to show at least 12 per cent. of phosphoric acid, the greater portion of which would be available. The content of nitrogen would approximate 1 per cent.

Bonedust Manufacture.

Most manufacturers of bonedust have to deal with three classes of bones, viz., "green," "extracted," and "marine" bones. In addition, some of the larger works are organized to collect and treat the carcasses of animals.

"Green" bones are those obtained fresh from the carcass, and which have not received any previous treatment. "Extracted" bones are bones which have been subjected to crude treatment for the purpose of recovering some of the tallow. They are sometimes known as "hashmagandy." "Marine" bones are those collected by sundry marine dealers. Usually the greater proportion of "marine" bones has been lying about exposed to the elements for long periods, and are "bleached" or "weathered" to such an extent that the fat and organic contents have considerably decreased. Many country butchers have boiling down works associated with their slaughter yards with the object of obtaining the greater proportion of crude tallow prior to selling the bones. From the manufacturer's standpoint "extracted" bones of this description and "marine" bones are not nearly so valuable as "green" bones.

For the successful installation of a bone-mill to treat, say, 1,000 tons of bones per annum, it is essential to choose a site adjacent to rail or water transport, and if in the country a sufficient supply of fuel should be handy. It is necessary to organize a system for the purchase and collection of raw material, of which an adequate supply must be assured.

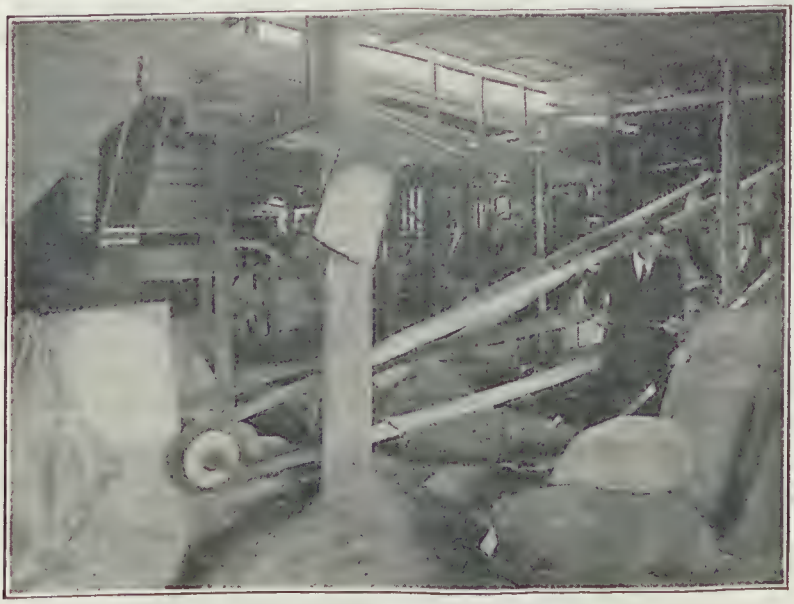
A small mill may be installed almost anywhere, and, as a matter of fact, there are in many out-of-the-way places in the country small mills each having an annual output of, approximately, 100 tons of bonedust. Works such as these are costly to run, and only survive because the product is sold locally at a price which is not in keeping with the cost of raw material.

It has been noticed that in some cases the output of country mills is not a fair measure of the ingoing raw material—in other words "breaking down" is in vogue. This is at all times a risky procedure, but doubly so in works where there is no chemical control.

There are two stages in the manufacture of bonedust, viz.:—(*a*) steaming the raw material in digesters and (*b*) the disintegration of the steamed and softened mass by some form of grinding mill.

In some instances a "dryer" is placed between the digester and mill to serve the two-fold purpose of drying the "mixed hashmagandy," and obviating as far as possible the obnoxious odours which naturally arise during the operations. Furthermore, a certain amount of disintegration takes place in the "dryer."

It is not the usual practice in the average bone-mill to treat the various grades of raw material separately. It is worthy of note, however, that "marine" or "bleached" bones will not produce much tallow, and at the same time the percentage of nitrogen and phosphoric acid in the finished product is somewhat different from that in the fresh bones. Marine or bleached bones, butchers' bones, and dead carcasses all go into the digester, where they are subjected to the steaming process. The tallow is floated off and the "soup" run to waste. The digested bones are discharged and allowed to stand for some days. When sufficiently dry the mass is fed into the mill, and the ground material then traverses a trommel screen. The mill is exactly similar to that used in freezing works. The fine material which passes through the screen, usually of ¼-inch mesh, is termed bonedust, and is bagged and marketed.



Interior View of Small Country Bone Mill.
(Grinding mill is in foreground behind the small pulley.)

The "overtail" is generally returned by elevator to the mill, where it is subjected to further grinding. It is questionable whether this procedure is economical, for the "overtail" usually consists of refractory material, and requires special treatment. It is this refractory "overtail" which causes the depreciation in bone-mills. Clean raw material in the form of bone and meat, after being softened in the digester, presents little difficulty in the grinding operation, but, unfortunately, foreign ingredients, such as bolts and other metallic substances, sometimes find their way into the raw material and the machinery consequently suffers. Wool, hair, pieces of horn and hoof, with certain hard parts of knuckle joints, also comprise the "overtail," and are very difficult to disintegrate.

The liquid from the digester known in the trade as "soup" contains appreciable quantities of fertilizing matter, but owing to the degree

of dilution, economical treatment is regarded as impracticable. There are instances in small country mills where the " soup " is discharged into pits containing absorbing material, such as gypsum or marl—more often earth—and after the lapse of some months, the semi-dry mass is utilized as a " filler." The value of the dissolved nitrogenous matter occurring in the " soup " is unquestionable. The content of nitrogen would be readily available, but, unfortunately, the larger proportion of liquid accompanying it renders recovery difficult, and the rough and ready method described is a pitfall, and certainly a risky procedure for the manufacturer. It should be noted that during the process of bonedust manufacture there is a decided loss in weight. One ton of mixed bones will not produce more than 15 cwt. of bonedust.

The value of bonedust is controlled largely by the degree of division, and this in turn depends, firstly, on the nature of the raw material, and, secondly, on the method of treatment.

The mechanical condition of bonedust is required to be quaranteed, together with the percentages of the fertilizing constituents, viz., nitrogen and phosphoric acid, whenever sales are made under the Fertilizer Acts. This means that the percentages of coarser and fine material contained in the bonedust have to be stated on the label attached to the bags containing the fertilizer. The fine material consists of the particles passing through a sieve containing 32 holes to the linear inch, and the coarser material of the particles remaining thereon.

The sieve or screen used in the factory being of ¼-inch mesh (four holes to the linear inch) it follows that the mechanical condition of the finished product is not regulated to any marked extent by the screening operation in the mill, the latter being useful only to the extent of producing a marketable product.

The regulation regarding mechanical condition must be read with the definition of bonedust in valuing the latter. Bonedust means a fertilizer consisting only of disintegrated bones or recent animal matter containing fifteen parts of phosphoric acid in each 100 parts of the fertilizer. Pure high-grade bonedust contains, approximately, 4.5 per cent. of nitrogen and 21 per cent. of phosphoric acid, the mechanical condition being half and half, i.e., 50 per cent. of fine and 50 per cent. of coarse bone. A bonedust of this grade,however, would require clean raw butchers' bones as a raw material.

In factories where all sorts and conditions of bones are received as raw material the resultant bonedust will vary in composition. Straight-run bonedust from bleached marine bones contains approximately 2.5 per cent. of nitrogen and 24.5 per cent. of phosphoric acid, whilst bonedust manufactured from " mixed " raw material might show an analysis of 3.5 per cent. nitrogen and 19 per cent. of phosphoric acid. The mechanical condition will vary from 33 to 66 per cent. of fine particles, the former being designated a " coarse " and the latter a " fine " bonedust.

Bonedust varies in its appearance. The product from raw material in which butchers' bones are largely predominant will appear as a greyish-white meal liberally bespattered with amber-coloured particles of gelatine and coarse white particles of bone. The product from raw material made up solely of " marine " or " bleached " bones is of a harsh dry nature, more or less of a white colour, and showing very little, if any, particles of gelatine. In most cases this bonedust is very coarse. Where occasional dead beasts and other animal matter go

through the mill, the bonedust produced is much darker in colour and a great deal finer in texture.

Judging bonedust from its appearance is like judging a book by its cover, unless the judge possess some technical appearance. Fine bonedusts are more valuable than those of a coarser nature, providing they are the product of disintegrated bones. Herein lies the difficulty of judging on appearance. However, it is safe to say that the greater the proportion of gelatine and the darker the colour of the bonedust, the higher its content of nitrogen; vice versa, a white bleached appearance with but little gelatine and meat showing is followed by a high content of phosphoric acid. In bonedust the greater the percentage of nitrogen, the lower the content of phosphoric acid. An increase in phosphoric acid is followed by a decrease of nitrogen.

Bones contain approximately half their weight of calcium phosphate (termed phosphate of lime), which in turn contains, roughly, half its weight of phosphoric acid. Approximately one-third of the weight of bone consists of organic matter, mostly proteid in character, with which

View of a Country Bonedust Mill.

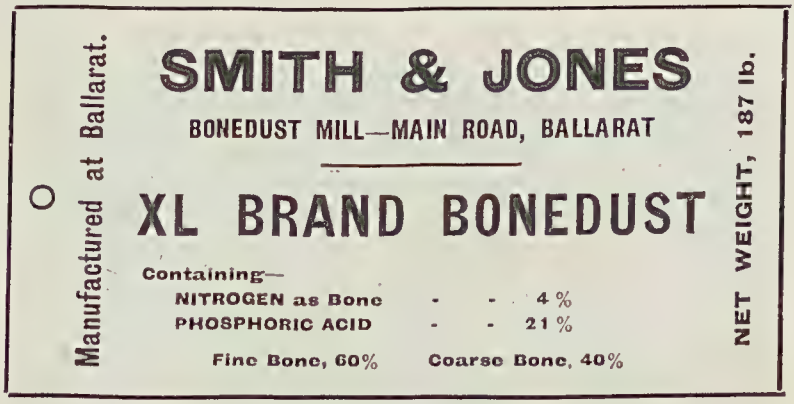
is associated 4 per cent. of nitrogen. The remaining portion of bone (17 per cent.) consists of water, calcium carbonate and fluoride, and alkali salts.

Dried meat contains approximately two-thirds its weight of organic matter (proteid), and the nitrogen content will vary from 7 to 10 per cent. The remaining one-third of the weight consists of water and calcium phosphate, and contains, approximately, 10 per cent. of phosphoric acid. Wool, woollen wastes, and hair are mainly nitrogenous, consisting almost entirely of organic matter and water, the content of nitrogen being from 7 to 17 per cent., with small amounts of potash and phosphoric acid. Horn and hoof (gelatine) are also nitrogen "builders," containing 90 per cent. of organic matter, in which nestles 14 per cent. of nitrogen and 2 per cent. of phosphoric acid.

All these substances are utilized more or less in the manufacture of bonedust and animal fertilizers, and one can readily understand from the figures disclosed how their presence will alter to a greater or lesser extent the composition of the final product.

Bonedust being an artificial manure within the meaning of the Fertilizer Acts is required to be guaranteed. Every vendor at the time of sale or before delivery of any part thereof must tender to the purchaser an invoice certificate certifying the quality of the bonedust, and, furthermore, every bag containing the bonedust must be branded with the registered brand, and in addition have a label affixed containing the information required by law.

The following label illustrates the correct method of labelling bonedust:—


Manufactured at Ballarat.
SMITH & JONES
BONEDUST MILL—MAIN ROAD, BALLARAT
XL BRAND BONEDUST
Containing—
NITROGEN as Bone - - 4 %
PHOSPHORIC ACID - - 21 %
Fine Bone, 60% Coarse Bone, 40%
NET WEIGHT, 187 lb.

(To be continued.)

TEXT-BOOKS ON AGRICULTURE.

For the guidance of agriculturists the following list of standard text-books on the principles of agriculture has been drawn up:—

	Price. s.	d
Fream's Elements of Agriculture—Ainsworth-Davis ...	10	6
The Farmer's Handbook—Agricultural Department of New South Wales	15	0
Agriculture—Cornell & Hadfield	7	6
Californian Fruits—Wickson	25	0
Forage Plants and their Culture—Piper	17	0
Dairy Cattle Feeding and their Management—Lawson and Putney	25	0
The Principles of Irrigation Practice—Widtsoe	17	0
Nature in Farming—J. W. Paterson	5	6
Citrus Fruits—Coit	19	0

All the books specified can be obtained through any of the chief booksellers in the Commonwealth.

APRICOT GROWING.

(Continued from page 645.)

By W. H. Nicholls, Orchard Supervisor.

VIII.—Pruning.

The object in pruning is to obtain trees with a frame-work sufficiently strong to carry a maximum crop without being damaged, or distorted by broken limbs or split trunks. To attain this end, it is necessary to

Fig. 9.—A Campbellfield's Seedling (unpruned).

start with the yearling trees, and by intelligent and systematic handling induce them to grow in such a way as to resist any demands made upon them by the weight of a heavy crop.

Unfortunately, in their desire to obtain headed trees in the least possible time, many are prone to "head" the young bud as soon as it reaches a given height, irrespective of the condition of the buds at that height. It is a common practice to cut back these growths at the one time to ensure uniformity, as far as the appearance of the block of young trees is concerned, ignoring altogether the state of maturity. For instance, if a grower decides on heading his trees at, say, fifteen

inches, and the bulk of the buds have attained that height or, perhaps, an inch or two over, he treats them all alike. with the result that he produces headed trees of uniform height, but with the crown formed from practically the one centre. Such treatment is not conducive to good results, for, later on, when carrying a heavy crop, if one limb only be broken down the whole tree will be wrecked, the centre or heart of the crown being the weakest point.

If on the other hand the young buds are allowed to grow on until the wood has matured above the required height, the buds will be wider apart, and invariably allow the formation of a head with the arms radiating from different positions on the trunk. This is most desirable,

Fig. 10.—Same Tree as in Fig. 9, Pruned.

for then, if a limb should be broken off, that one is all that is lost, owing to its being independently placed. The latter system is especially valuable in the apricot tree, the buds of which are much closer than those of other kinds of fruit trees.

Before planting it is necessary to go over the roots, and with a sharp knife remove all broken or damaged ones, cutting from the under side of the root.

After planting, the trees should be pruned with the object of initiating a strong frame work as previously mentioned. As types vary, it is not possible to set down any hard and fast method, but uniformity and systematic shaping should be aimed at.

The economic working of orchards is paramount, and if the best results are to be obtained, trees must be grown so that they may be easily handled when pruning, spraying, or picking operations are being performed. The orchardist's endeavour should be to obtain a maximum bearing area on that portion of each tree within reach, thus eliminating as far as possible the necessity for the use of ladders. Trees that have not been so pruned at the outset are difficult subjects to handle, and if later on it is found desirable to change over, much valuable time is lost.

Fig. 11.—An Unpruned Moorpark Tree.

As apricot trees are vigorous growers, summer pruning is becoming a general practice; in the irrigation districts much unnecessary hard cutting is thus obviated, and crops, generally speaking, are improving owing to the sap flow being directed to spur and bud development.

The tree shown in Fig. 9 is a Campbellfield Seedling, nine years' old. It was heavily winter-pruned, and much useless growth removed, so that the buds were insufficiently matured to produce fruit, although probably the tree blossomed freely. This illustrates the effect of heavy

winter pruning when not followed up by summer treatment. In addition to taxing the tree unnecessarily, the pruning of such trees is much harder in the winter when the wood has fully matured.

To make a tree treated in this way produce payable crops of saleable fruit, it is necessary to prune (in winter) as shown in Fig. 10, and unless this pruning is followed up by summer treatment the tree will lapse into the unsatisfactory condition it was in during the previous winter. In this instance, the objects sought were to clearly define the leaders, to shorten laterals so as to induce fruiting spurs nearer the main arms, to space and thin spurs, and to leave the centre open.

Fig. 12.—Same Tree as in Fig. 11, Pruned.

Fig. 11 is an unpruned Moorpark. The tendency here is to crowd out the body of the tree by allowing a heavy "top hamper" to remain, which, of course, would mean that most of the fruit would be borne in the top reaches of the tree. The presence of cross limbs and branches also militates against the production of good fruit, and is a wrong principle in any tree. Fig. 12 shows the same tree pruned. The leaders and sub-leaders are now well spaced, allowing free access of light and air to centre; the long laterals have been removed, and the

centre is open. Summer pruning will be found necessary and advantageous wherever such heavy cutting is practised.

Fig. 13 illustrate a 4-year-old Tilton. This tree was started on right lines, "checks" were put in early, and the first duplications low set. But one season's neglect has altered the whole standard, and a tree permitted to continue in this condition would soon become unsightly and unprofitable. Fig. 14 shows the same tree pruned. To remedy the neglect of one season it has been found necessary to build up from X instead of at A. The uncut leaders assist in procuring a

Fig. 13.—A Four-year-old Tilton Tree (unpruned).

break of buds from the crown up, owing to the outlet at the extreme tip being closed, thus causing a "damming up" at the base, forcing growths which otherwise would have remained dormant.

Fig. 15 is a Mansfield seedling six years old. This plate shows clearly the effect of a bad start. The heavy top hamper has flattened the leaders; in addition to being ill-formed, this type of tree never carries a maximum crop, the underside of the limbs being bare of spurs, and the body of the tree barren, owing to the exclusion of light and air.

Fig. 16 shows the same tree pruned. All high forks have been removed, and the leaders inclined upwards and left clearly defined. As is the case with other heavily winter pruned trees, summer treatment must follow.

The trees illustrated are all growing under irrigation conditions, and heavy cutting is invariably followed by heavy growth, which should be removed as soon as the crop is harvested.

Fig. 14.—Same Tree as in Fig. 13, Pruned.

Just according to soil, climatic, and cultural conditions, do pruning methods vary, and the observant grower is able to determine what variations are necessary for his requirements; but the main essentials are the same everywhere—shapeliness, uniformity, and productiveness compatible with quality fruit should be the objective.

The apricot being a long living tree, and one that grows to a large size, is capable of producing heavy crops of fruit. "Thinning out" fruit is an essential, and prevents exhaustion from overbearing; it also assists in obtaining fruit of better size.

IX.—Manuring.

All trees making large quantities of wood and foliage each year, and bearing heavy crops of fruit, should have liberal supplies of manure. Nitrogen, phosphoric acid, potash, and lime are necessary foods for the apricot, and as soils vary so much, it is difficult to state

Fig. 15.—A Six-year-old Mansfield Seedling (unpruned).

even by soil analysis what amount (in available form) of each or any is present. The surest method is to apply a complete plant food at such times and in such quantities as will give maximum results.

The functions of each of the plant foods mentioned are as under:—

Nitrogen.—To stimulate growth of leaf and stem.

A deficiency is shown by stunted growth and sickly colour. An excess produces rapid and sappy growth, with an abundance of dark-coloured foliage and lighter crop.

Fig. 16.—Same Tree as in Fig. 15, Pruned.

Phosphoric Acid.—To stimulate maturity of the tree and hasten the ripening of the fruit.

A deficiency is shown by lack of vigour.

Potash is essential to the production of starch, fibre, and growing parts of the tree.

A deficiency is shown by a weakened growth and want of fruit fulness. An excess does not show any visible effect.

Lime has both a chemical and mechanical action in the soil, and renders the other plant foods more effective. It also hastens the decay of organic matter in the soil and corrects acidity.

Apricot trees when nine or ten years old should be in full bearing, and if the best results are to be maintained, the application of from 6 to 10 lbs. per tree of a complete manure is advisable. The application is best made before the trees commence to blossom, and should be given so that the feeding roots can readily obtain it. In heavy soils it should be ploughed in; in light soils it will soon be carried down to the roots by water, cultivation, &c.

Sulphate of potash, nitrate of soda, sulphate of ammonia, or any specific manures are sometimes applied when the crop is set, the object being to give the fruit the benefit of a stimulant, thus increasing the size and colour; 1 lb. per tree is found sufficient. Green manuring is of the greatest benefit in soils deficient in "humus," and if a leguminous crop (such as peas, beans, clover, or lupins) is sown, nitrogen is collected from the atmosphere by means of the microbes which inhabit the nodules found on the roots of such plant. In addition to supplying nitrogen these plants furnish valuable humus or organic matter when ploughed under.

The crop should be sown early in the Autumn, and a dressing of superphosphate given to hasten its growth, so that it may be in fit condition to plough under before irrigation is necessary in the orchard. The correct time to plough in the crop, if a supply of humus is the main consideration, is when it is in full bloom. It will be found advantageous to run a disc harrow over the crop two or three days before ploughing under, so that the excess moisture may be got out: thus the loss by heating and subsequent acidity is avoided, and the maximum results from the added humus are ensured.

The addition of fertilizers (and when necessary, humus), to the soil will ensure strong and vigorous trees, which are less susceptible to disease.

(*To be continued.*)

A GARDENING BOOK.

We have received from the publishers, per favour of the author, Mr. Leslie H. Brunning, a copy of the twentieth edition of the *Home Gardener.*

The work is attractively arranged, and should meet the needs of gardeners generally. It contains a large number of illustrations, and useful tables for time of sowing, &c., are included.

The orchard, flower and vegetable gardens are fully dealt with, and the knowledge gained from a perusal of the book should materially assist the gardener in his efforts.

The price of the book is 7s. 6d., posted 7s. 10d.

CONTROL OF WOOLLY APHIS.

By C. French, jun., Government Entomologist, and L. Pilloud, Orchard Supervisor.

An Effective Spray.

During 1923 several experiments in the control of woolly aphis (*Eriosoma lanigerum*) were carried out at Upper Pakenham at the orchard of Mr. W. Laidlaw.

The first spray used was nicotine sulphate alone, which was applied on the 1st May. The results were only partially successful. On the same date 100 trees, between nine and ten years old and very bady infested with woolly aphis, were treated with a combination spray of nicotine sulphate and red oil and soap. These trees were examined on the 20th November last, and were found to be perfectly free of woolly aphis. The total cost of the material required to spray the hundred trees was 11s., made up as follows:—

	s.	d.
Nicotine sulphate, 1 pint	7	6
Red oil, 1 gallon	3	6
	11	0

The cost thus works out at less than 1½d. per tree.

To prepare sufficient mixture to treat 100 trees, 1 lb. soap should be boiled in a gallon of water till dissolved; add 1 gallon of red oil and mix thoroughly; then add 1 pint of nicotine sulphate, and after mixing the whole for a few minutes, add 80 gallons of water. If the water is hard, a small piece of washing soda should be added.

The whole tree should be treated and the spray applied with sufficient force to reach insects in crevices.

From our experience we are of opinion that the best time to apply this combination spray is during the winter months when the trees are free of leaves. It has, however, been used in October on trees in blossom and no burning occurred. It would not be advisable to use the spray during the summer if the ground were very wet, as a slight burning of the leaves might occur.

Experiments with many other sprays were carried out, but with rather unsatisfactory results. Further, the cost of them would prohibit their general use.

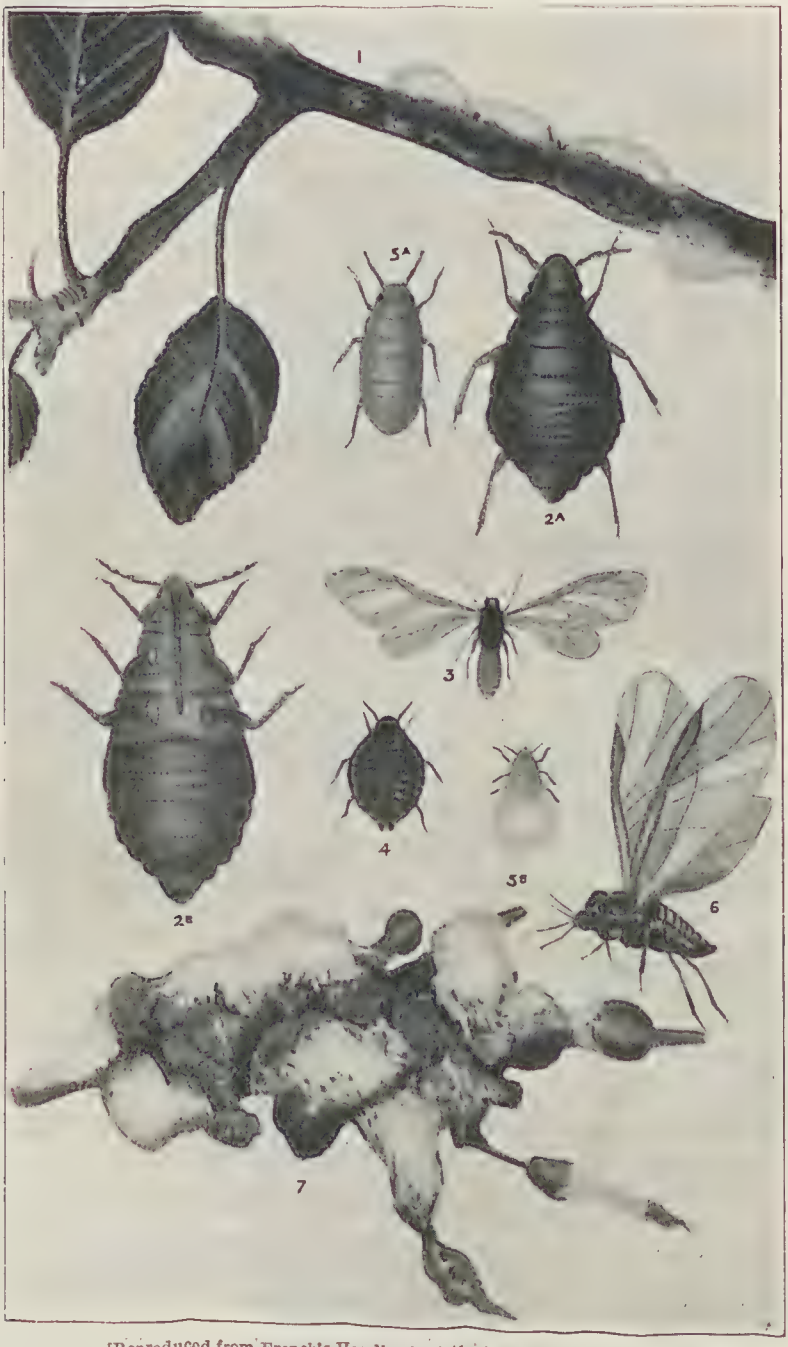
We are indebted to Mr. Laidlaw for permitting us to use his orchard, and to Mr. W. Black, Mr. Laidlaw's manager, who helped to carry out the experiments and did all the work of spraying.

Parasites on Woolly Aphis.

A number of woolly aphis parasites (*Aphelinus mali*) has been imported from New Zealand by the Science Branch of the Department of Agriculture, and when sufficient have been reared they will be liberated.

In view of the success of the experiments with the combination spray, however, and its very moderate cost, orchardists would be well advised not to rely wholly on the parasites to destroy the aphis.

NATIONAL MUSEUM MELBOURNE



[Reproduced from French's Handbook of the Destructive Insects of Victoria, Part 1.

Explanation of Plate on opposite page.

1. Portion of stem of apple tree showing downy covering to young insects.

2A. Wingless larvae; upper view. Highly magnified.

2B. Wingless larvae; under view. Highly magnified.

3. Winged male; upper view. Highly magnified. (After Cooke.)

4. Queen aphis, or foundress of the colony. Highly magnified. (After Buckton.)

5A. Young insect. Highly magnified.

5B. Young insect, with downy covering. Highly magnified.

6. Winged viviparous female. Highly magnified. (After Buckton.)

7. Root of apple tree, showing downy covering to insects.

MARKETINC TURKEYS.

By W. C. Rugg, Chief Poultry Expert.

Farmers breeding turkeys for the Melbourne market are, in many cases, not getting as profitable returns for their birds as they would if a little more care were exercised in the selection of breeding stock, and in the care and marketing of the young birds.

Crooked Breasts.

This season a great number of turkeys sent to Melbourne had crooked breasts. Such birds, no matter how fat, are of absolutely no use for export, and the best class of poultry-buyer will not purchase them for local consumption, as caterers require only birds with sound, straight, plump breasts for their best customers. Poultry auctioneers in the city are often blamed for not getting the prices expected by consignors, when it is the consignors' fault in sending birds that, though in plump condition and of good weight, have crooked breasts. The best buyers attending the various auction rooms are keen business men; they thoroughly examine the birds before the sales begin, and are quick to notice faults and limit their bids accordingly; but for birds of tip-top quality, without faults, there is always vigorous competition.

Turkey breeders could, with a little care, do a great deal to improve matters in this respect. In the first place, by examining their breeding stock, particularly the males, and discarding all birds with crooked breasts, and using for breeding purposes only those sound in breast.

In travelling through the state I often see young turkeys roosting on paling fences, or on perches made from the small branches of trees; this is most injurious to the young stock, and in most cases means the ruination of their breasts. The perches of young turkeys should never be less than three inches wide, and a 6-inch board is better.

The using of a stud bird with a bent breast means that many of his progeny will inherit the unfortunate characteristic. In the illustration on page 729, the bird (B) was the sire of the birds (C) and (D). These two sons inherited the crooked breast of their father, and although the three of them were plump well-conditioned birds, the shape of the breast prevented their bringing top prices. The bird (A) in the illustration has the class of breast desired by the best buyers. Such birds will always realize good prices, either for export or for the best local trade.

Loss by Careless Crating.

Another cause of loss to the breeder is careless crating by overcrowding and putting turkeys into crates too small when sending them to market. To land turkeys in Melbourne in the best condition, only turkey crates should be used. The measurements of these crates are 4 feet x 2 ft. 6 in. x 1 ft. 9 in. Not more than eight gobblers should be put in one crate; if they are extra good, say average weights of 23 to 25 lbs., seven is enough; not more than ten hens should be put in any crate. The crates should have at least six inches of straw in the bottom; this will make them more comfortable for the birds; and thus they will lose less weight on the journey; it also lessens the risk of birds receiving injury to the skin of the breast—injuries which make the best of breasts unsightly when dressed; this is another little point that does not escape the eye of the prospective buyer.

A.—Well-breasted Turkey. B, C, D.—Turkeys with Crooked Breasts.

WHEAT AND ITS CULTIVATION.

(Continued from page 614.)

By A. E. V. Richardson, M.A., D.Sc., Director, Waite Agricultural Research Institute, South Australia, late Agricultural Superintendent, Victoria.

X.—WHEAT VARIETIES.

The varieties of wheat grown in Australia vary widely in morphological and agricultural characters. They may be classified on the basis of these characters. Such a classification was attempted by the Seed Improvement Committee, and the result of this classification was published by the Institute of Science and Industry (Bull. 26, 1923). This bulletin summarizes the main botanical characteristics of 85 varieties.

The cultivated varieties of wheat have been classified by Percival into eleven races which he designates as "cultivated species." Of these eleven races only two are cultivated extensively in Australia, namely, *Triticum vulgare* (bread wheat), and *Triticum durum* (macaroni wheat).

With the exception of Huguenot, Medeah, and Kubanka, which belong to the macaroni wheats, all the cultivated varieties in Australia belong to *Triticum vulgare.*

The Macaroni wheats are chiefly distinguished by their grain, which is long and narrow, more or less pointed at both ends, with a prominent dorsal ridge. The endosperm is hard and flinty, and angular in cross section. The bread wheats have grain of varied form and size, but usually plump with a blunted apex, and rounded on the dorsal side without a prominent ridge; it may be flinty or mealy, but is rarely angular in section.

The botanical characters of taxonomic importance in wheat are (*a*) presence or absence of beards or awns, (*b*) pubescent or glabrous chaff, (*c*) coloured or colourless chaff, (*d*) dark or light coloured grains.

These characters are hereditary, and are therefore of greatest value in classification. They afford a means of classifying wheat varieties into sixteen different classes.

Most of the varieties grown in Australia, however, fall into two of these sixteen classes, namely:—

(1) Beardless, glabrous, light chaffed, light grained varieties.
(2) Beardless, glabrous, dark chaffed, light grained varieties.

Hence if the description and classification of the varieties is to be pushed further, characters of lesser taxonomic value must be pressed into service. These minor characters are of two kinds—

(*a*) Morphological, i.e., relating to the precise shape of the ear, density of the ear, structure of the glumes, &c.
(*b*) Agricultural, i.e., those relating to the habit and method of growth of the plant.

The latter characters, while of importance to the practical farmer, are of little real value for purposes of classification, because they vary with changes in the plants' environment, i.e., soil and climate. The morphological characters are not materially affected by environmental changes, and are therefore of greater value for purposes of nomenclature.

The morphological characters of greatest value for classification are colour of chaff, presence or absence of beard, pubescent or glabrous chaff, light or dark coloured grain. Other morphological characters of value are the following:—

1. *Character of Straw.*—Whether solid, semi-solid, or hollow. Some varieties, e.g., Huguenot and Medeah, have almost solid straw, whilst others, e.g., Yandilla King, possess straw with a thin containing wall and no internal pith.

2. *Shape of Ear.*—Clubbed, square, or tapering. The clubbed ear, e.g., Clubhead, is much broader and denser at the tip than the base. Square-head wheats, e.g., Bayah, have the same width of ear from base to apex. The tapering ear is very common. It may be slightly wider at the middle of the ear and tapering towards both base and apex, or it may taper from the base to the apex.

3. *Density of Ear.*—The average density of the ear is often used for purposes of classification. It is usually expressed in terms of the number of spikelets per 100 millimetres of rachis length.

Ears may be classed as dense, medium dense, or lax, according to the average number of spikelets per unit length of rachis. The dense wheats average 25 or more spikelets per 100 millimetres, the medium dense average from 20 to 25, and the lax wheats less than 20 spikelets per 100 millimetres of rachis. To determine the density, measure the length of a number of ears in millimetres, count the number of spikelets, and from this calculate the average number of spikelets per 100 m.m.

The densest wheats are those of the clubbed type, e.g., Clubhead, Medeah, Currawa. Typical lax eared varieties are Gluyas, King's Early, and Marshall's No. 3.

4. *Spikelets.*—The spikelets may be tightly packed together, as in Medeah, or spreading or fan-shaped, e.g., King's Early. The spikelets of most of the commonly grown varieties may be described as medium spreading.

5. *Hardness of Grain.*—The character of the grain is dependent largely on the conditions prevailing during the ripening period. In seasons favorable to heavy production, i.e., prolonged cool weather and liberal rainfall during the ripening stages, the grain becomes plump, well filled with starch, soft, and mealy, and the protein content is low.

When the ripening period is rapid, due to hot, dry weather during the final stages of maturity, the kernels tend to become more or less hard and flinty and translucent, and the grain possesses a higher proportion of protein to starch. Certain varieties of wheat, particularly the durums, e.g., Medeah, Kubanka, Huguenot, will produce hard, translucent grains under almost all conditions, but even with these the quality of the grain will be better when produced under relatively dry conditions than when produced in a moist ripening period.

6. *Size and Shape of Grain.*—The size of grain is to some extent dependent on the conditions under which the crop has developed, and the position of the grain in the ear.* The size of the grain is, however, of some value in identification. Bobs and Comeback have small grains. Yandilla King and Currawa, and, of course, the Durum wheats, have large grains. The length of the grain varies less than breadth or depth. The range in length of grain for bread wheats is from 5 to 8 m.m.

The shape of the grain, while very variable within the variety, is often of value in distinguishing some varieties. Bobs and Comeback have small shotty grain, somewhat square in outline and blunt at the brush end. Other varieties, e.g., Indian 5, are almost spherical in shape, whilst the grain of other types, e.g., Federation, is oval in shape, somewhat pointed at both ends. The grains of Currawa have a

* A. E. V. Richardson and W. Heber Green, "Researches in Wheat Selection," *Journal of Agriculture*, Victoria, 1916.

very characteristic central depression in the crease which enables one, apart from its other characteristics, to distinguish it from other varieties of similar ear structure.

Agricultural Characters.

The most important of these are the height of straw, stooling capacity, and period of maturity. These characters are of great practical importance to the grower, but they are of little value for purposes of classification, because they vary widely under different conditions of soil and climate.

The Seed Improvement Committee of the Institute of Science and Industry* obtained information on the variability of pure lines of seed under varying environmental conditions. Seed of some 40 varieties of wheat were sown at Cowra, New South Wales; Merredin, Western Australia; Roma, Queensland; and Booboorowie, South Australia; and data obtained regarding height of straw, tillering, and time of ripening for each variety. When the results were compared it was found that many varieties which were tall in one district were quite short in another. Some varieties, e.g., Medeah and Huguenot, were, however, consistently tall at all centres.

The tillering capacity of the varieties varied so widely under the different climatic conditions that it was found impossible to classify the varieties according to their tillering capacity.

Tillering is dependent to some extent on the variety, but mainly on the soil conditions during growth. Some varieties, e.g., the durum wheats, tiller but little, whilst other varieties, e.g., Marquis, tiller well. Generally speaking, late maturing forms, e.g., Yandilla King, tiller well, while early maturing types, e.g., Sunset, Bunyip, stool sparingly.

Profuse tillering, however, is an index of the natural exuberant growth, and while to some extent it is dependent on hereditary qualities, it is also dependent on those external conditions which check or assist vegetative growth. The condition of the soil, the moisture content, the soil temperature, the available plant food present, the time of sowing and rate of seeding, and distance apart of the plants all affect the tillering.

Period of Maturity.—The earliness or lateness of maturity is an agricultural character of considerable value in classification. In dry or droughty seasons the differences between early and late maturing wheats is less marked than in normal or wet seasons, because all varieties ripen prematurely under droughty conditions.

The date of appearance of the first ear gives the highest correlation with the period of maturity. The difference in period of blooming of early and late maturing varieties may be as much as five to six weeks, though the difference in time of maturing between the earliest and latest varieties may be only three to four weeks. The difference between early and late maturing varieties is most pronounced in cool or wet years, and least noticeable in hot dry years.

VARIETIES GROWN IN VICTORIA.

Among the many varieties grown in Victoria the following are the more important:—

Early.—Bunyip, Canberra, Comeback, Firbank, Gluyas, King's Early, Nizam, Rajah, Ranee, Steinwedel.

* Bulletin 26, Institute of Science and Industry, p. 17.

Midseason to Late.—Bobs, Currawa, Dart's Imperial, Federation, Gallipoli, Graham, Huguenot, Major, Marshall's No. 3, Mac's White, Medeah, Minister, Penny, Purple Straw, Turvey, Warden, White Tuscan, Yandilla King.

Bobs.—This variety was produced by Farrer in 1896, and is said to be a cross between Nepaul Barley and Early Lambrigg wheat. It is one of the best of the Australian milling varieties. The grain is hard, shotty, and translucent, and yields a good percentage of flour of very high strength. The flour is very suitable for blending purposes.

It is a mid-season variety, with erect, light-coloured, hollow, but somewhat thick-walled straw. The ears are pale yellow, beardless, glabrous, somewhat lax in character, with spreading spikelets carrying small yellowish, plump, translucent grain, which tends to shell readily. On account of its excellent milling quality it is valued by millers, and prices considerably above f.a.q. rates have been paid for this variety. Notwithstanding this it has not been grown largely in Victoria because it is not a prolific yielder.

Bunyip.—An early-maturing variety, bred by Farrer by crossing Rymer and Maffra. It has a pale-yellow, glabrous, somewhat tapering but moderately dense ear with large spreading spikelets, almost beardless, with a few short tip-awns. The grain is large, yellowish, opaque, soft, and starchy. It is one of the earliest grain varieties.

Canberra.—An early-maturing variety bred by R. Hurst, of New South Wales. It is said to be a cross between Federation and Volga Barley. It is a dark-chaffed, beardless, glabrous, light-grained variety, with a square to slightly tapering tip-awned ear of moderate density, with short, broad, spreading spikelets and large, soft, starchy grain. It is a moderately tall-growing variety, with semi-solid straw. Its earliness of maturity makes it specially suited to hot, dry districts. It has given good yields of grain in the Riverina and in the Mallee areas of Victoria.

Comeback.—One of Farrer's "high-strength white" wheats, produced by crossing Improved Fife with an unnamed crossbred. It is an early to mid-season variety, with hollow straw, bald, pale-yellow, glabrous, tapering ears of moderate density (22 to 24 spikelets per 100 m.m.), with broad spreading spikelets. It is a tall-growing variety which shows a slight tendency to shatter the grain. The grain is short, yellow, semi-translucent, and possesses high flour strength. For some years after its introduction millers gave a premium for Comeback wheat. It is not, however, grown very largely in Victoria, mainly because of its somewhat light-yielding capacity.

Currawa.—A crossbred variety produced by H. Pye, Cerealist of Dookie College, from Little Club and an unnamed crossbred from Northern Champion x Cretan. A vigorous, tall-growing mid-season to late variety, with hollow, thin-walled straw. The ear is clubbed in shape, with compact, densely-crowded spikelets near the summit, pale yellow in colour, glabrous, bald, with a few irregular tip-awns. The average density ranges from 30 to 33 spikelets per 100 m.m. of rachis. Spikelets large, compact, with very large yellowish opaque grain showing a characteristic central depression in the crease. It holds the grain well, is a good grain yielder, and is very popular in Victoria.

Dart's Imperial.—A variety originated from a Purple Straw variety by Mr. T. Dart, of Nhill, formerly of Lucindale, South Australia. It is one of the oldest varieties. It is a good all-round grain and hay wheat, and is a very reliable grain yielder in most districts. It is a moderately tall-growing mid-season to late variety, with hollow, somewhat pithy

straw. The ears are pale yellow in colour, bald, but with tip-awns, glabrous, well developed, with crowded, compact spikelets, giving the ear a clubbed appearance. Grain large, yellowish, opaque, soft and starchy, of low strength.

Federation.—A variety produced by Farrer from a cross between Yandilla and Purple Straw. This is without question the most popular and prolific variety in cultivation in Victoria.

The production of this wheat was the greatest of Farrer's triumphs in wheat breeding, for none of his many successful crossbred wheats have enjoyed for over a decade such popularity as Federation. Indeed, the colour of our harvest fields have been gradually changed from the golden yellow tints characteristic of wheats formerly grown to a dull bronze through the increasing popularity of Federation.

In 1924, approximately 60 per cent. of the wheat area of Victoria was sown with Federation. In the Wimmera district over 80 per cent. of the wheat area is devoted to Federation. This popularity has been won by sheer merit, for Federation, seen in the field for the first time, is decidely unattractive, especially when grown side by side with the showy wheats of the Purple Straw type. Most farmers in growing it for the first time have expressed great surprise at the yielding capacity when the wheat was taken off, for the yield invariably exceeded expectations based on pre-harvest estimates. As a matter of fact, Farrer's main aim in producing Federation was to obtain a variety suited to the Australian methods of harvesting with the stripper.

As might be expected, there are numerous strains of Federation developed from the original of Farrer's. Hard Federation, produced by Pridham, of New South Wales, is slightly earlier, and has grain of better quality than Federation, and in some districts it yields as well as Federation.

Wannon, a selection of Federation produced by the Victorian Department of Agriculture at Longerenong College, has shown improved yielding capacity over Federation during the past few years. Many of the new crossbred wheats have a strain of Federation in their pedigree. Federation is a medium, short-growing variety, with hollow, thick-walled straw, which does not lodge. The ears are of moderate length, square to slightly tapering, bald, glabrous, dark brown in colour, of moderate density (20 to 24 spikelets per 100 m.m. of rachis). Spikelets large, spreading, with yellow medium-sized grains of soft, mealy consistency. The grain is of low milling strength and poor in gluten. It is susceptible to rust, flagsmut, and, to a lesser extent, takeall. Notwithstanding these drawbacks it is a prolific grain variety. The grain is liable to suffer from bleaching, especially during showery, harvest weather, owing to the fact that, unlike many of the older wheat varieties, the ear stands upright when ripe, and readily allows rain to penetrate.

It is a mid-season variety, a heavy grain-yielder, and holds the grain well.

Firbank.—A crossbred variety bred by Farrer by crossing Zealand with Maffra; an early-maturing variety grown largely for hay, especially in the Riverina. It is a tall-growing variety with hollow straw, and long, light-yellow, tapering, glabrous ears, with a few short awns. The ear is lax and open, with large spreading irregular spikelets. Grain large, yellowish, opaque, soft, and starchy.

Gallipoli.—A crossbred variety produced by the writer by crossing Clubhead with Yandilla King. This is a short-growing, mid-season variety, with shallow thick-walled strong straw. It has a bald, brown,

glabrous, dense, moderately long, compact, clubbed ear, with large but not spreading glumes, and yellow, semi-translucent, large, oval grain, with very long embryo. The original crossbred held the grain very closely, somewhat like the Yandilla King parent, but several selections have been obtained in which the grain is readily threshed. This variety has given heavy yields at Werribee and Longerenong, and at various experimental plots in the wheat belt. It has a high migration ratio (i.e., percentage of grain to straw), and its short straw and prolific character make it suitable for hot, dry districts.

Gluyas.—An early-maturing variety of wheat raised by Messrs. Gluyas, of South Australia, as a selection from Ward's wheat. It is a beardless, glabrous, dark-chaffed and light-grained wheat. Although the straw is semi-solid, it has great tendency to lodge. The ear possesses a few irregular tip-awns, and is of medium length, lax, with spreading spikelets. The grain is large and usually soft and starchy. It is fairly immune from fungoid diseases and possesses high rust-resistant qualities. It is a vigorous, moderately tall, early-maturing variety, especially suited to the drier areas. Its great drawback is its weak straw, and its tendency to lodge. As the grain ripens the dark bronze-coloured ears become pendulous, but do not shell on account of the firmly closed enveloping glumes. A bearded form of this, somewhat earlier in maturity, is grown under the name of Bearded Gluyas.

Graham.—A crossbred variety produced by the writer from a cross between Indian 8 and Comeback. It is a tall-growing mid-season to late variety, with hollow, thick-walled straw. The ear is pale yellow in colour, bald, with tip-awns, glabrous, square to slightly tapering, lax, with large, spreading, regular spikelets. The grain is large, yellow, dark, translucent. This variety has given good results in departmental tests. It is a good grain-yielder, and a good hay wheat.

Huguenot.—A variety produced from Medeah by J. Correll, of Arthur River, Western Australia. It is a tall-growing wheat of the macaroni or durum class, quite free from the long coarse beards characteristic of Medeah. The straw is practically solid, and very sweet in character. It stands up well, frequently growing to a height of 6 feet. It stools sparsely, so that it must be sown very thickly.

In early growth it is erect and of light-green colour. The head is very dense and compact, bald, light-brown, with bluish-black markings, and large, compact, very regular spikelets. The grain is long, hard, horny, angular, slightly pinched, dark-yellow, and adheres closely to the chaff, making the wheat difficult to thresh. It has a high gluten content, but the colour of the flour is objectionable. It is highly resistant to fungoid diseases. It yields heavy crops of fodder and hay, but its grain yield is low. It is essentially a hay and forage variety. The price of the seed is much higher than that of other varieties. The proportion of grain to straw in this variety is low.

King's Early.—A selection made by Mr. Joseph King, of Georgetown, South Australia. A vigorous, early-maturing, tall-growing variety, with semi-solid straw, largely grown for grain in the hot, dry areas of South Australia. Ears light yellow, tapering, bearded, glabrous and lax, with large spreading spikelets. Grain large, soft, opaque, semi-translucent. Two types, based mainly on colour of grain, were isolated by Perkins, of Roseworthy College—King's Red, with brownish-red grains, and King's White, with light-yellow grains.

Despite the semi-solid character of the straw, this variety tends to lodge in favorable seasons. In spite of its beard it is valued in the dry

Mallee areas of South Australia as a hay wheat on account of the solidity and sweetness of its straw, and its capacity to retain its colour well.

Mac's White.—This variety is said to have been obtained by Mr. W. McDonald from a consignment of wheat imported from New Zealand. This is a popular wheat in the newer Victorian Mallee, where it is valued on account of its strong-growing qualities, and its capacity to grow above the ubiquitous Mallee shoots that are so prevalent in the early stages of Mallee settlement, and because it provides a good bulk of straw and flag for stubble burning after harvest. A good stubble burn assists in the control of Mallee shoots. While it yields well, it has a strong tendency to shatter its grain, and must be harvested as soon as mature. It is a tall-growing variety, with hollow, but slightly pithy straw. The ears are long, open, tapering, creamy white, glabrous, with large, spreading spikelets. The grain is large, yellowish-white, soft, and mealy.

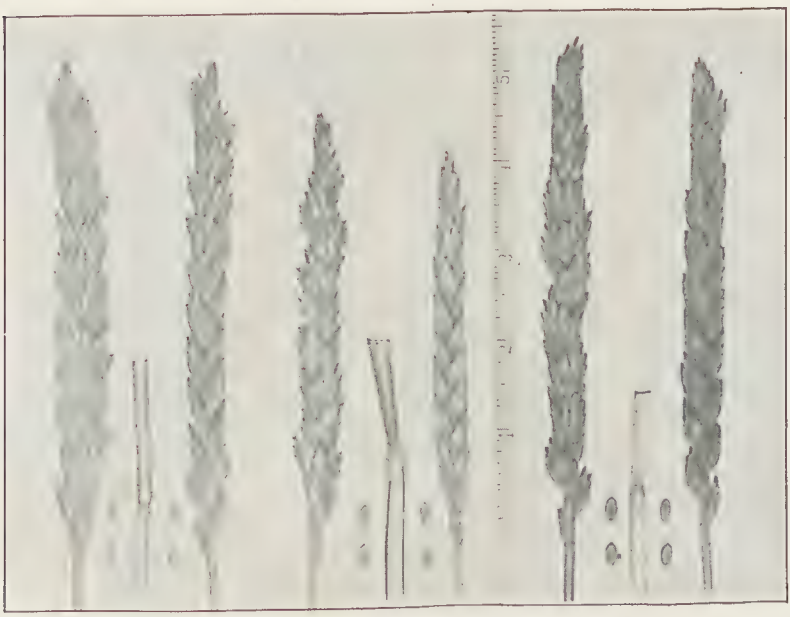
Major.—A crossbred produced by H. Pye, Cerealist of Dookie Agricultural College, from Federation and Wallace. This variety has become very popular in Victoria, especially in the moister districts, owing to its high grain-yielding capacity in favorable years. It is a moderately tall-growing, mid-season to late variety, with strong, coarse, hollow straw. The ears are light-yellow in colour, glabrous, fairly dense, bald, with a few irregular tip-awns, square, with a tendency to clubbiness towards apex. The ear is moderately long, with large, broad, spreading spikelets, and yellowish-white, oval, opaque, soft, starchy, medium to large grain. It tillers well, is somewhat susceptible to rust and takeall, but yields well in the cooler districts, and in seasons with liberal spring rains.

Marshall's No. 3.—A selection from Ward's Prolific made by R. Marshall, of South Australia. It is a late-maturing wheat of good tillering capacity, but rather slow growing when young, with spreading habit, and broad, dark-green drooping leaves. The straw when ripe is hollow, slightly pithy, and develops a purplish tinge. The ears are long, tapering, very lax and open, bald, but with slight tip beards, creamy-yellow, glabrous. The grain is large, soft, white, plump, yellowish in colour. It is fairly resistant to rust. It is popular in South Australia, New South Wales, and Queensland, and is a reliable general-purpose variety.

Medeah.—Very similar to Huguenot in structure and general qualities, except that the ear possesses long, straight, coarsely-toothed awns. It is suitable for fodder, ensilage or hay. This variety was obtained from M. Vilmorin, Paris.

Minister.—A variety produced by H. Pye, of Dookie Agricultural College, from a cross between Dart's Imperial and an unnamed crossbred. It is one of the best milling wheats grown, and is highly valued by millers. The grain is yellowish to dark-yellow in colour, hard, translucent, oval, and of medium to large size. It has a good gluten content, and the flour possesses high water absorption capacity. It is a mid-season to late variety, with hollow straw varrying some pith. The ears are creamy-white, glabrous, dense, with distinctly clubbed appearance. Spikelets are of medium size, regular, but somewhat spreading. It gives the best yield of those varieties of high milling quality, and its production marks a distinct advance in the direction of producing a prolific wheat of good quality.

Nizam.—A new crossbred variety produced by the crossing Indian 17 x Federation. A vigorous, moderately tall-growing, mid-season to



Bobs. Comeback. Federation.

Dart's Imperial. Penny Yandilla King.

Currawa. Major. Minister.

Firbank. Warden. White Tascan.

Canberra. Mac's White. Bunyip.

Gallipoli. Ranee. Rajah.

Medeah. Huguenot. Kubanka.

Steinwedel. King's Early. Gluyas.

early variety, with bald, compact, glabrous, well developed ears, clubbed at apex with bronze-coloured chaff devoid of awns. Density of ear 25 to 28 spikelets per 100 millimetres of rachis length. Grain oval, medium to large, yellowish, soft, and starchy. This variety has done well in departmental tests, and also in the tests in the new Mallee areas. It is a prolific yielder of grain in moderately dry seasons.

Penny.—A selection from Squarehead, produced by Mr. Penny, of Western Australia. This variety has given consistently good yields in the Mallee and Wimmera of Victoria. It is a strong, tall-growing wheat, with hollow, somewhat pithy straw. The ears are creamy-yellow in colour, glabrous, well developed, compact, and clubby, almost bald, but with tip-awns. The ear is dense, with large, regular, somewhat spreading spikelets, carrying large, yellowish, oval, soft, starchy grain. It is a prolific grain-yielder in the Mallee and Wimmera.

Purple Straw.—This is one of the oldest-cultivated varieties in the wheat belt. It is a fairly tall-growing, mid-season to late wheat, with hollow, purplish straw, and abundant foliage. The ears are of moderate length, creamy-yellow, square or very slightly clubbed, glabrous, and possess short tip-awns. The ear varies from lax to moderately dense, and the spikelets are large and spreading, with yellow, opaque, oval, rather large, soft, mealy grain. It is very liable to rust and takeall, and owing to its liability to disease it has been gradually superseded by hardier, less leafy and more prolific varieties.

Steinwedel.—A selection made by A. Steinwedel, of South Australia. An early maturing, hollow-strawed variety, extensively grown in South Australia and New South Wales, and to some extent in Northern Victoria. It is a heavy yielder, but has a strong tendency to shed its grain, and should, therefore, be harvested as soon as it reaches maturity in order to obviate losses. The ears are pale yellow, moderately dense, glabrous, beardless, with slight tip-awns. The ear is of medium length, slightly tapering, with broad, spreading spikelets set irregularly on the rachis. Grain rather large, oval, yellowish-white, opaque, soft, and starchy. Improved Steinwedel, a Dookie selection, does not shatter its grain as badly as the original selection.

Rajah.—One of the new crossbred varieties which has shown considerable promise in the Mallee areas. An early-maturing, vigorous variety with somewhat short, but compact, bald ear. Chaff light creamy-yellow with short tip-awns. Wide-spreading spikelets with many grains in the spikelet. Grain medium large, yellowish-white, soft, and starchy. It is a prolific grain-yielder in dry, hot Mallee districts. This variety was obtained by crossing Indian E with Telford's.

Ranee.—An early-maturing, crossbred variety which has given considerable promise in the newer Mallee areas. Ears of moderate length, dark-brown, glabrous, bald, with slight tip-awns. Ears moderately dense and somewhat tapering at the tip. Grain medium large, brownish-yellow, slightly starchy, to semi-translucent. A prolific grain-yielder in hot, dry Mallee districts. It was produced by crossing Indian E with Federation.

Turvey.—A variety grown fairly extensively in Victoria for hay. It is a tall-growing, vigorous-stooling variety with hollow, purple straw. It possesses light-yellow, glabrous, tip-bearded, tapering, lax ears, with large, regular, somewhat spreading spikelets. The grain is large, yellowish-white, opaque, soft, and mealy.

Warden.—A variety produced by H. Pye, of Dookie Agricultural College, from a cross between an unnamed crossbred and Red Bordeaux. It is one of the most popular hay varieties in Victoria. It is a tall-growing variety, with hollow but thick-walled straw, mid-season to late in habit. It stools fairly profusely, and produces abundant foliage. The ears are of medium length, yellowish in colour, tapering, glabrous, almost bald, with a few short tip-awns. The ear is lax and somewhat open, with large, irregular, spreading spikelets. The grain is very distinct in appearance from most of the varieties cultivated in Australia. The testa is reddish-brown in colour, and the endosperm opaque and mealy. The grain is dull reddish-brown in appearance, long and narrow. It is not a heavy grain-yielder, but is an excellent hay variety, growing good yields of fine quality hay which retains its colour well. On the Werribee plains large areas of a mixture of Warden wheat and Algerian oats are sown for hay.

White Tuscan.—This was formerly a very popular hay wheat. It is a selection from Purple Straw. It is a late-maturing variety, with fine quality, sweet straw, which retains its colour well when cut for hay. The ears are light-yellow in colour, glabrous, long, tapering, open, with short awns throughout the whole length of the ear. The spikelets are rather broad and spreading, and the grain yellowish-white, soft, opaque, large, and somewhat pointed.

Yandilla King.—This variety is extensively grown in the wheat belt. It is a crossbred variety, having been produced from a cross between Yandilla and Silver King (a white-strawed variation of Marshall's No. 3). It is thus a half-sister to Federation. It is a late-maturing variety, with good stooling propensities, and grows rather slowly in the early stages. The ripe straw is stiff, hollow and upright, bearing long, creamy-yellow, well developed, glabrous, somewhat open ears. Slight tip-awns are developed throughout the entire length of ear. The spikelets are large, spreading and regular, carrying grain closely adhering to the chaff. It therefore does not strip readily.

The grain is yellow, rather dark, large, semi-translucent, medium hard, and of very fair milling quality. It has been a consistently heavy yielder, and must be regarded as one of the most prolific grain varieties in general cultivation.

(To be continued.)

STANDARD HERD TEST.

Report for Quarter ended 30th September, 1924.

During the quarter, cows to the number of 412 completed the test. Of these 261 qualified for the certificate—a proportion smaller than formerly owing to the raised standards.

Junior classes comprise animals under 2½ (200 lbs.), 3½ (225 lbs.) and 4½ (250 lbs.) years of age respectively at date of calving. Senior classes comprise animals over 2½ and under 3 years (275 lbs.), over 3½ and under 4 years (300 lbs.) and over 4½ and under 5 years (325 lbs.) respectively at date of calving. Mature cows are those five years and over at date of calving (350 lbs.).

The following shows the record of each individual cow, those indicated by *italics* being the animals which failed to yield the amount of butter-fat necessary for a certificate:—

Owner.	No. Completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
S. T. Algie, Murraydale	1	1	Shorthorn	Daisy 5th	..	1·11·23	266	4	10,308	3·73	384·20	350	253
H. Allez, Moama ..	1	1	Friesian	St. Albans Pearl	542	25·12·23	273	22	10,910	3·19	348·07	275	
J. Anderson, junior, Lyndhurst	3	3	Jersey ..	Linda 57th of King's Vale ..	12856	27·9·23	273	16	4,928	5·84	287·86	200	
				Linda 52nd of King's Vale ..	9177	29·10·23	273	22½	8,493	5·44	461·68	300	365, 441
				Ruby Rose of Tarnpirr ..	12861	13.11.23	273	20	8,079	5·39	435·65	275	
W. H. Atherton, Murraydale	1	1	Jersey	Quality of Meadowvale ..	10133	2·12·23	273	17½	5,235	6·61	346·24	275	293
W. K. Atkinson, Swan Hill	9	9	Shorthorn	Roan Daisy 18th	10900	26.9.23	273	19	10,380	4·15	430·53	350	370, 345, 388, 436
				Countess of Willow Park ..	9250	5.10.23	273	9½	8,658	4·15	359·20	350	264, 330, 382
				Blanche Rose 9th	10891	24.10.23	273	9½	9,912	3·69	365·53	350	272, 316, 365, 387, 357, 436
				Duchess 2nd of Willow Park..	11452	31.10.23	273	4½	6,337	3·68	233·26	225	220
				Fairy of Willow Park ..	..	6.11.23	273	32½	9,498	4·00	380·12	200	
				Cherry of Willow Park ..	9198	8.11.23	273	42	15,036	3·97	596·81	350	325, 474, 636
				Dainty of Willow Park ..	..	20.11.23	273	16	5,864	4·10	240·46	200	
				Damsel of Willow Park ..	..	20.11.23	273	23	7,413	4·55	337·65	200	
				Princess of Willow Park ..	12510	20.11.23	273	27	9,796	3·77	369·69	300	256, 368
F. Austin, Lara ..	1	1	Jersey	Mercedes Neatest of Avalon ..	12866	23.10.23	273	15½	4,910	5·96	292·80	200	

STANDARD HERD TEST—*continued.*

Owner.	No. Completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
Baillieu Bros., Echuca	4	2	Jersey	Larkspur of Tuerong	10481	16.10.23	273	18	5,744	5·39	309·47	250	270
				Beauty of Perrallilea ..	Not yet allotted	6.11.23	273	14	4,521	5·18	234·33	200	
				Mystery 14ths Beauty of Lesterfield	6987	12.11.23	273	14	5,592	4·75	*265·89*	350	254, 340, 369, 335
				Canary of Tuerong	10479	4.12.23	252	4	4,946	5·83	*288·37*	300	265, 290
J. Baker, Gheringhap	3	Nil	Red Poll	*Karong Rose 6th*	919D	27.9.23	273	6	3,668	4·25	*155·74*	200	
				Karong Rose 5th	920D	5.11.23	273	11½	3,777	4·49	*169·65*	200	
				Karong Rose 4th	504D	10.11.23	273	9	5,170	4·17	*215·45*	325	
J. J. Baker, Bannockburn	3	3	Jersey	Lady Grey 23rd of St. Albans	13325	15.10.23	273	11½	4,783	5·99	286·41	200	
				Lady Grey 25th of St. Albans	13326	27.10.23	273	12½	4,919	5·35	263·36	200	
				Blue Lass of Linden ..	7520	4.12.23	273	18	6,271	5·01	314·43	300	209
C. Bamford, Benalla	3	3	Ayrshire	Leaflet of Medburn Grove ..	8301	4.10.23	273	8½	4,963	4·80	237·72	200	
				Moonbeam of Medburn Grove	8307	5.10.23	273	26½	12,404	4·03	499·95	350	255, 327, 390
				Honeycomb of Medburn Grove	10747	7.12.23	273	17	8,537	4·23	360·07	250	264
A. E. Batson, Buckley	14	Nil	Jersey	*Lady Marge of Ferndale* ..	6368	11.10.23	273	5½	4,334	5·65	*244·74*	350	278, 282, 277
				Defenders Queen of Somerset ..	10142	22.10.23	273	4½	4,664	4·81	*224·37*	275	215
				Lady Grey 6th of St. Albans ..	6367	30.10.23	273	4½	3,581	6·06	*216·95*	350	266, 258, 276
				Muriel 2nds Joy of Somerset ..	13696	30.10.23	273	4½	2,681	5·85	*156·88*	200	
				Lassie 2nd of Somerset ..	9195	5.11.23	273	4	4,454	4·73	*211·76*	350	
				Margaret's Fancy of Somerset	9196	9.11.23	273	8½	4,504	5·05	*227·53*	350	189, 274
				Nancy of Somerset	9198	18.11.23	225	4	3,333	5·61	*187·00*	300	172, 217
				Daisy 2nd of Somerset ..	9190	25.11.23	203	4	3,148	6·34	*199·48*	250	196
				Daisy 3rd of Somerset ..	9191	4.12.23	273	12	4,811	5·14	*247·56*	250	244
				Margaret's Choice of Somerset ..	13828	8.12.23	273	6⅓	3,383	5·16	*174·37*	200	
				Margaret's Favourite of Somerset	13829	8.12.23	260	4	2,959	5·69	*168·33*	200	
				Nancy 3rd of Somerset ..	13697	9.12.23	273	8½	2,862	4·68	*133·89*	200	
				Goldmine of Somerset ..	13691	9.12.23	273	5	3,078	5·06	*155·68*	200	
				Kitty 2nd of Somerset ..	9194	11.12.23	258	4	3,990	5·88	*234·82*	350	284, 325

STANDARD HERD TEST—*continued.*

Owner.	No. Completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
Mrs. I. Beard, Outtrim	1	1	Jersey	Shadow of Luscombe ..	6143	3.10.23	255	4	7,129	5·22	371·93	350	262, 281, 323, 196, 390, 359
F. W. Beischer, Bendigo	3	Nil	Jersey	*Rita of Linden*	7533	24.10.23	273	15½	6,674	5·18	*345·72*	350	357
				Tragedy of Linden	7537	10.12.23	273	8	5,669	5·03	*285·41*	350	348
				Blossom of Woodside ..	6391	22.12.23	263†	9	4,103	6·01	*246·66*	350	311
Mrs. A. Black, Noorat	1	Nil	Jersey	*Grey Girl*	2064	26.10.23	234	4	3,178	4·86	*154·40*	350	170, 263, 272, 227, 167, 221, 244
A. A. Broad, Sutton Grange	5	4	Jersey	Daisy 2nd of Grangelea ..	14128	2.10.23	273	12½	4,901	5·60	293·85	200	
				Princess of Grangelea ..	9226	19.10.23	273	15½	7,066	4·92	*347·92*	350	327
				Defenders Favourite of Boorene	9225	24.10.23	273	14½	8,029	5·10	409·37	350	418, 381
				Princess 3rd of Grangelea ..	9227	26.10.23	273	15	5,809	5·08	295·00	200	
				Goldfinch 2nd of Grangelea ..	14129	3.11.23	273	14	5,075	5·24	265·69	200	
Messrs. Callery Bros., Bannockburn	9	6	Ayrshire	Rose of Langley Park ..	6185	26.9.23	273	11½	8,827	3·98	351·06	300	291, 248
				Mountain Princess of Langley Park	3480	7.10.23	259	4	8,596	4·04	*347·45*	350	244, 270, 255, 395
				Empress of Langley Park ..	6178	12.10.23	214	4	6,486	3·87	*251·18*	325	266, 278, 276
				Effie of Langley Park ..	8544	15.10.23	273	9	5,485	4·25	*232·85*	250	189
				Pet of Langley Park ..	11827	18.10.23	273	13½	5,232	4·24	221·95	200	
				Mena of Langley Park ..	8548	19.10.23	273	6	6,867	4·27	293·38	250	166
				Edna of Langley Park ..	8543	21.10.23	271*	10½	5,699	5·07	288·97	200	
				Memorie of Langley Park ..	11826	21.10.23	271*	16½	6,334	3·98	252·15	200	
				Ruby of Langley Park ..	8556	20.11.23	241*	19½	5,588	4·36	245·67	200	
R. C. Campbell, Clarendon	2	2	Jersey	Heroine of Spring Vale ..	13704	2.11.23	273	10½	4,804	5·54	266·38	200	
				Fairy Queen 2nd of Spring Vale	12162	2.12.23	240*	11½	3,935	5·52	217·12	200	

* Herd withdrawn from test. † Withdrawn before completion of term.

Standard Herd Test—*continued*.

Owner.	No. Completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
H. W. D. Canobio, Toolamba	7	4	Ayrshire	Duchess of Woodstock Grange	8759	26.9.23	273	10	5,791	3·95	228·66	200	
				Adella of Woodstock Grange	4958	2.10.23	273	10½	8,544	4·42	377·38	325	245, 385
				Pearl of Wodstock Grange	8764	16.10.23	273	14½	5,137	4·07	209·25	200	
				Bud 2nd of View Point	9595	16.10.23	273	13½	9,331	3·36	360·55	350	261, 437
				Primrose of Wethersdane	5285	23.10.23	273	7½	7,752	3·77	*293·24*	350	263, 277
				Beauty of Quarry Hills	10135	30.10.23	228	4	6,603	4·65	*307·27*	350	307, 379
				Boronia of Woodstock Grange	6190	10.12.23	240	4	6,562	4·30	*282·40*	300	235, 349
Mrs. M. E. Carroll, Tyntynder Central, via Swan Hill	3	Nil	Red Poll	*Limerick*	269A	3.10.23	273	5	5,653	4·67	*264·00*	275	193, 135
				Scotia	525D	11.10.23	273	7½	7,458	4·07	*303·12*	350	304, 318, 295, 379, 254, 220
				Cambria	430C	20.10.23	248	4	4,951	4·46	*221·03*	350	200, 287, 253, 222
P. Chirnside, Oakleigh	4	3	Jersey	*Werribee Starbright 8th*	6543	13.10.23	256*	9½	6,676	4·90	*326·88*	350	364
				Werribee Attraction's Fancy Madeira	13337	17.10.23	273	14½	5,102	6·44	328·77	200	
				Keepsake of Warenda	8566	3.12.23	273	19	6,600	6·23	411·19	300	248, 349, 342
				Phillis 2nd of Warenda	7195	9.12.23	273	24½	10,041	5·24	526·54	350	310, 373, 428
Colac High School	2	1	Friesian	Victoria Milk Belle	997	3.10.23	200*	31	6,892	3·35	230·89	225	
				Dominion Woodnymph	988	17.11.23	273	18	11,072	3·12	*345·74*	350	336, 329, 323, 285
H. Cowling, Mornington	2	2	Jersey	Rarity 11th of Melrose	6944	2.10.23	273	7	8,542	5·11	436·26	350	365, 403, 334
				Vanilla 17th of Melrose	11783	4.10.23	273	32½	9,187	5·23	480·91	250	303
O. Cutler, Murraydale	3	2	Jersey	*Vanilla 5th of Melrose*	3678	4·10.23	240	4	6,593	4·10	*270·69*	350	397, 440, 393, 387, 367, 430, 362, 359
				Silk Stockings of Lea Hurst	11326	12.11.23	273	23	5,551	6·46	358·77	225	273
				Clovelly Gem	13342	26.11.23	273	14	5,084	5·66	285·85	200	

* Withdrawn before completion of term.

STANDARD HERD TEST—*continued.*

Owner.	No. Completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
E. A. Dennis, Swanpool	1	Nil	Jersey	*Flower 13th of Melrose* ..	13343	22.12.23	273	13½	4,936	6·90	*340·45*	350	319
Department of Agriculture, Werribee	8	4	Red Poll	Victoria Ghenta	793B	27.9.23	273	28	8,317	3·86	321·04	200	
				Victoria Rose Major	5AA	11.10.23	273	18	8,223	3·95	324·54	225	216
				Nictitana	311B	17.10.23	273	23½	10,300	4·40	452·99	350	181, 385, 379, 381, 453, 470
				Victoria Virgilia	863C	10.11.23	273	13½	4,061	4·20	*170·44*	200	
				Briar	379C	13.11.23	273	12½	9,056	4·47	404·63	350	254, 297, 364, 364, 391, 330
				Moora	720A	23.11.23	273	10	5,543	3·63	*201·06*	225	
				Samaria	316B	23.11.23	273	4	4,367	4·21	*184·06*	300	270
				Broom	240A	12.12.23	273	14	5,314	4·14	*220·25*	275	165
	1	1	Friesian	Victoria Joybell	995	9.11.23	273	7	8,769	3·67	321·74	250	300
	1	1	Jersey	Victoria Beautous	10198	5.12.23	273	15½	6,022	6·84	412·13	275	272
H. Dettmann, Kyneton	2	2	Jersey	Renard Lily	5140	5.10.23	273	20	7,077	5·25	371·66	350	
				Lady Betty of Ellimatta ..	9292	14.10.23	273	16	7,477	5·07	379·41	325	
Dickinson Bros., Sebastopol	3	3	Friesian	Queenie of Ashby	267	26.9.23	273	32	14,557	3·74	544·02	350	296, 440, 487, 526
				Bonny Jean 2nd of Ashby ..	1003	16.12.23	273	31	10,067	3·61	363·75	250	
				Pauline 3rd of Ashby ..	1002	21.12.23	215	4	7,709	3·30	254·70	250	260
S. Earle, Merricks ..	2	2	Jersey	Midilli of Somerville ..	11486	12.11.23	273	16	7,506	5·03	377·86	250	318
				Beauty 6th of Somerville ..	11484	27.11.23	273	14½	5,541	4·79	265·14	200	

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Standard Herd Test—*continued.*

Owner.	No. Completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
S. H. Ebery, Newstead	1	1	Shorthorn	Dairyman's Daisy of Grand Pre	..	5.12.23	273	16	5,634	4·53	255·07	200	
A. E. Ellis, Archie's Creek	2	2	Jersey	Beatrice of Holbrook ..	12903	6.11.23	273	13½	5,252	5·61	294·79	200	
				Nancy of Holbrook ..	12905	24.11.23	273	18	6,477	5·28	341·94	300	
G. Esler, Tongala ..	1	Nil	Jersey	*Jubilee Dahlia .. ..*	10451	17.11.23	250	4	5,196	4·53	*235·56*	275	148, 164
Evans Bros., Lima East	5	4	Red Poll	Flowing Vale Salvetta ..	Not yet Allotted	4.10.23	273	20	6,540	3·08	200·06	250	
				Merven	133 AA	5.10.23	273	9	7,365	3·82	281·18	250	194
				Flowing Vale Peachette ..	Not yet Allotted	9.10.23	273	12½	5,134	4·35	223·12	200	
				Flowing Vale Zillah 2nd ..	„	15.10.23	252*	16	10,252	4·00	409·68	350	462
				*Flowing Vale Nancy 5th ..	„	30.10.23	273	9	4,378	3·97	*173·63*	200	
C. Falkenberg, Colac	3	Nil	Jersey	*Princess of Colac .. ..*	4912	18.10.23	273	11	5,543	5·60	*310·23*	350	209, 236, 255, 358, 244, 257
				Queen of Colac	9310	20.10.23	273	10	4,103	5·15	*211·10*	250	133
				Star of Colac	9311	28.10.23	273	9½	4,145	4·94	*204·64*	250	141
R. Faragher, Koroit	1	Nil	Jersey	*Bright Jewell of St. Albans ..	5980	3.10.23	263	4	5,069	4·95	*251·07*	350	364, 327, 256
T. R. Findlay, Leitchville	2	2	Jersey	Lady Grey 22nd of St. Albans	13345	27.9.23	273	14	4,567	4·96	226·44	200	
				Lucy Grey of Colac.. ..	9352	19.10.23	273	15½	9,202	5·31	488·35	350	357, 389
Finn Bros., Bundoora	2	2	Jersey	Vanity of Clarendon Eyre ..	13533	10.10.23	273	18¼	7,190	5·30	381·03	350	
				Princess Royal of Springhurst	*5403*	*21.10.23*	*273*	20½	10,201	5·51	562·67	350	294, 334, 421, 461, 506

* *Withdrawn before completion of term.*

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
Flack and Sewell, Berwick	19	13	Friesian	Jessie Fobes Homestead of Oakview	1079	26.9.23	271*	21½	10,175	3·65	370·95	325	250, 281
				Dominion Iona	263	1.10.23	273	41½	21,864	3·17	693·15	350	336, 225, 361, 382, 223
				Ashlynn 69th	1091	2.10.23	116*	20	3,023	3·57	*107·87*	250	
				Ashlynn 56th	1086	3.10.23	273	16	6,733	3·62	*243·73*	300	254, 231
				Ashlynn 74th	1092	3.10.23	266	4	7,430	3·52	*261·38*	275	160, 192
				Joan's de Kol of Brundee ..	687	14.10.23	273	10	9,281	3·01	*279·49*	325	228
				Burnbank Bainfield Patch ..	Not yet allotted	15.10.23	273	23	9,974	3·91	390·05	225	
				Burnbank Inka Sylvia Violet	1106	19.10.23	273	14	9,641	4·15	400·30	250	297
				Ashlynn 71st	1013	20.10.23	273	23	10,795	3·90	420·72	300	
				Burnbank Inka Sylvia Flower	1107	23.10.23	273	17½	7,973	4·30	343·59	250	216
				Rosevale Rosie Abbekerk ..	1094	24.10.23	273	62	17,914	3·14	562·73	275	347, 434
				Burnbank Inka Sylvia Mercedes	Not yet allotted	27.10.23	262*	14	5,401	3·82	206·26	200	
				Burnbank Woodcrest Fayne	414	28.20.23	273	12	11,673	3·13	365.22	300	270
				Bainfield Topsy 15th ..	1175	29.10.23	273	24	8,750	5·04	440·70	225	350
				Ashlynn 25th	1076	1.11.23	273	9	9,335	3·53	*329·85*	350	292, 252
				Burnbank Springfield Inka Lass	753	8.11.23	273	10	8,135	3·43	279·07	225	168
				Dutch Girl of Berry ..	141	18.11.23	273	7	7,779	3·64	*283·14*	350	313, 257
				Burnbank Inka Segis Fraulein Muller	1204	30.11.23	273	30½	10,670	3·31	353·00	200	
				Dutch Girl 2nd of Berry ..	221	10.12.23	273	25	10,605	3·69	391·09	350	208, 327, 371
Mrs. M. and W. A. Francis, Kilcunda	3	Nil	Ayrshire	*Choice of Hillcrest*	9081	4.10.23	273	6	2,884	5·30	*152·81*	200	
				Elena of Springfield	4967	4.10.23	273	8	6,558	4·38	*287·00*	350	232, 213, 229, 244
				Leila of Hillcrest	9083	25.12.23	273	4	4,933	4·23	*208·87*	250	189
G. Gange, Mininera	1	1	Ayrshire	Sunlight of Roseleigh ..	12110	6.12.23	260	4	5,794	4·00	231·84	200	
N. Gange, Mininera	3	Nil	Ayrshire	*Balm of Carracoorte*	6413	1.11.23	197	4	7,573	4·09	*309·58*	350	207, 236, 205
				Winnie of Kelvin Grove ..	4849	12.11.23	186	4	6,647	4·00	*266·18*	350	292, 249
				Heather of Riverdale ..	...	13.11.23	273	5	3,727	4·12	*153·40*	200	

* Withdrawn before completion of term.

Standard Herd Test—*continued*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
Geelong Harbour Trust Marshall	13	5	Ayrshire	Ringlet of Sparrovale ..	9107	28.9.23	273	13	4,645	4·48	207·93	200	
				Gipsy Girl of Sparrovale ..	3894	4.10.23	261	4	6,369	4·43	*281·89*	350	324, 372, 309, 324, 354
				Rosalind of Sparrovale ..	9108	4.10.23	273	7	3,541	4·81	*170·54*	200	
				Belladonna of Sparrovale ..	9092	6.10.23	273	9	5,413	4·47	*242·08*	250	
				Mignonette of Sparrovale ..	9100	12.10.23	273	9½	3,910	4·63	*181·02*	200	
				Pimpernel of Sparrovale ..	9105	14.10.23	273	4½	4,646	4.42	205·24	200	
				Boronia of Sparrovale ..	7309	16.10.23	273	14	10,709	4·53	484·95	300	400, 403
				Amy of Sparrovale	9090	22.10.23	273	9½	4,234	4·64	*196·64*	200	
				Blossom of Sparrovale ..	3885	10.11.23	245	4	6,498	4·40	*286·11*	350	266, 315, 307, 271
				Bud of Sparrovale	9094	21.11.23	273	9	4,875	5·77	281·15	250	239
				Viola of Sparrovale ..	3908	29.11.23	235	4	5,699	4.57	*260·44*	350	352, 434, 458
				Daisy of Sparrovale ..	3888	30.11.23	273	11½	6,145	4·93	*302·65*	350	290, 317, 298, 295
				Annie Laurie of Sparrovale ..	9091	3.12.23	273	15½	7,146	4·31	307·89	250	254
Gibson Bros., Trafalgar	1	1	Jersey	Easter Daisy of Austral Park	11031	11.11.23	273	12½	5,909	6·25	369·53	325	
R. Goodman, Kilmany South	2	2	Ayrshire	Cashmere's Queen of Roseneath	7329	1.10.23	258	4	6,374	4·20	267·93	250	155
				Nightingale 2nd of Raith ..	9760	26.10.23	273	11	9,813	4·35	427·33	350	231, 275, 258, 153
T. Harvey, Boisdale	4	4	Jersey	Blue Bell 2nd of Jerseyholm ..	6845	10.10.23	273	18	7,571	5·57	423·39	350	285, 419
				Sparkle 2nd of Jerseyholm ..	5920	22.12.23	273	14	6,835	6·23	425·81	350	304, 415, 414, 395
				Empress 3rd of Jerseyholm ..	10255	24.12.23	273	18½	6,637	5·96	395·69	200	
				Empress 2nd of Holmwood ..	4979	25.12.23	273	22½	8,567	5·64	483·19	350	365, 388, 491, 450, 502
W. Henderson, Grasmere	35	22	Ayrshire	Peony of Carracoorte ..	9427	27.9.23	273	15	5,498	4·25	233·50	200	
				Pearl 3rd of Carracoorte ..	9424	27.9.23	273	8½	6,125	4·41	*270·30*	350	143, 185, 148
				Filpail 8th of Carracoorte ..	9362	28.9.23	273	11	5,032	4·70	236·59	200	
				Sparkle 3rd of Carracoorte ..	7405	29.9.23	273	12	6,516	4·69	305·64	300	104, 111
				Lena 3rd of Carracoorte ..	9396	29.9.23	273	9	4,264	4·98	212·23	200	
				Pearl 4th of Carracoorte ..	9425	29.9.23	273	8	4,109	4·88	200·28	200	
				Lizzie of Carracoorte ..	9400	4.10.23	273	12	4,767	4·59	218·91	200	
				Viola 4th of Carracoorte ..	9454	5.10.23	273	15	5,450	4·38	238·70	200	
				Blanche of Carracoorte ..	9323	5.10.23	273	14½	6,097	4·44	270·93	200	

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
W Henderson, Grasmere—*continued.*	..	..	Ayr-shire	Rosebloom 7th of Carracoorte	9438	11.10.23	273	10½	5,495	4·74	260·37	250	171
				Iris 4th of Carracoorte ..	9386	12.10.23	273	10	4,601	5·45	250·65	200	
				Bunty 3rd of Carracoorte ..	9330	12.10.23	273	5	7,217	4·72	*340·93*	350	208
				Viola 5th of Carracoorte ..	9455	14.10.23	273	20	5,821	4·57	266·10	200	
				Bloom of Carracoorte ..	9324	14.10.23	273	9½	4,185	4·80	200·16	200	
				Lady Mac of Carracoorte ..	9389	19.10.23	201	4	1,425	4·33	*61·62*	250	81
				Pearl of Carracoorte	3998	21.10.23	273	7	6,678	4·03	*269·13*	350	182, 251, 215
				Betsy 9th of Carracoorte ..	9319	23.10.23	273	9	4,384	4·83	*211·69*	250	110
				Coral 6th of Carracoorte ..	9339	23.10.23	273	13	5,017	4·66	233·59	200	
				Minerva's Balm 4th of Carracoorte	9417	26.10.23	273	10	4,628	4·83	223·46	200	
				Flossie of Gleneira	3983	28.10.23	273	14½	6,965	4·25	*296·08*	350	229, 246, 259, 172
				Brownie 6th of Carracoorte ..	9327	30.10.23	273	7	5,040	4·90	247·00	200	
				Betsy 10th of Carracoorte ..	9320	30.10.23	273	8½	4,977	4·79	238·44	200	
				Brownie 2nd of Carracoorte ..	3971	3.11.23	176	4	2,833	4·50	*127·38*	350	219, 152, 60
				Thelma 2nd of Carracoorte ..	4003	5.11.23	273	25	8,369	3·68	*307·58*	350	186, 127, 148
				Fenella 7th of Carracoorte ..	9355	5.11.23	273	12	5,271	4·40	232·09	200	
				Melville Beauty of Carracoorte	9411	6.11.23	259	4	3,771	4·64	*175·12*	200	
				Fenella 9th of Carracoorte ..	9357	8.11.23	273	11½	4,560	4·44	202·31	200	
				Helena 2nd of Carracoorte ..	9382	11.11.23	273	9½	4,660	4·25	*197·84*	250	117
				Brownie 7th of Carracoorte ..	9328	11.11.23	273	11½	4,447	4·90	217·77	200	
				Lucy 4th of Carracoorte ..	9406	12.11.23	252	4	3,387	5·08	*171·91*	200	
				Filpail 9th of Carracoorte ..	9363	18.11.23	273	25½	5,900	3·95	232·97	200	
				Ada 4th of Carracoorte ..	9306	25.11.23	273	11	4,669	4·56	212·82	200	
				Beauty 6th of Carracoorte ..	9310	6.12.23	262	4	4,420	4·90	216·63	200	
				Sparkle 4th of Carracoorte ..	9443	9.12.23	63*	17	1,163	4·30	*49·51*	250	145
				Rosebloom 6th of Carracoorte ..	9437	10.12.23	259	4	4,111	4·08	*167·72*	250	99
R. J. Henry, Euroa	1	1	Jersey	Bingle of Ilford	9452	24.11.23	273	21	6,498	5·66	367·70	350	
J. A. Huffer, Gormandale	1	1	Jersey	Rosebud 2nd of Brookfield ..	9617	15.12.23	273	22	7,070	4·92	347·62	275	
A. W. Jones and Son, Whittington, near Geelong	4	4	Jersey	Lady Grey 24th of St. Albans	13366	1.10.23	257*	16½	4,844	5·18	251·04	200	
				Lady Grey 17th of St. Albans	11514	22.11.23	273	17	6,013	5·07	304·63	250	298
				Lady Grey 12th of St. Albans	9433	20.12.23	273	17½	6,492	6·14	398·49	350	321, 302, 327
				Lady Grey 15th of St. Albans	10275	23.12.23	273	28	7,766	5·11	396·57	300	311, 394

* Withdrawn before completion of term.

Standard Herd Test—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.			lbs.	lbs.	
A. W. Jones and Son, Whittington, near Geelong — *continued.*	7	6	Friesian	Springfield Nesta	1392	12.10.23	273	21	10,610	3·00	318·51	250	273
				St. Albans Helen	367	1.11.23	259	4	8,633	2·89	*249·91*	325	278
				St. Albans Queen of Geelong..	Not yet allotted	3.11.23	273	26	8,489	3·30	279·85	200	
				Beryl of Craigneil	1034	9.11.23	273	22½	11,157	3·29	367·48	300	294, 359
				Ransome Lass 2nd	1033	9.12.23	273	12½	10,949	3·44	376·66	300	298, 387
				Daffodil Mercena	1030	18.12.23	273	36	11,341	3·14	356·17	350	226, 484, 392
				May Queen 2nd	347	25.12.23	273	35	12,094	3·95	478·42	350	410, 519, 617, 391, 534, 464
A. Joshua, Berwick	2	1	Jersey	Queen Mab 2nd of Hill Crest..	12188	25.9.23	273	8	4,286	6·08	260·43	200	
				Silver Daisy of Terara ..	9445	25.12.23	249	4	3,955	7·02	*277·67*	325	298, 289
J. F. Keating, Darnum	1	1	Red Poll	Thornhill Shiela	775A	19.11.23	273	10½	5,598	3·73	208·94	200	
G. Kent, Archie's Creek	3	Nil	Ayrshire	*Daisy of Woolamai Park* ..	7435	30.9.23	256	4	4,321	4·22	*182·57*	225	184
				Majory of Woolamai Park ..	7437	13.10.23	238	4	4,443	4·44	*197·47*	250	180
				Bud of Woolamai Park ..	7434	3.11.23	273	4	5,453	4·28	*234·30*	250	211
A. Kirby, Daylesford	5	Nil	Ayrshire	*Annie of Wattle Bank* ..	9681	11.11.23	245	4	6,194	4·35	*268·09*	275	265
				Ada of Wattle Bank ..	5311	17.11.23	273	10	7,024	4·30	*302·22*	350	240, 255
				Buttercup of Carracoorte ..	9331	18.11.23	180*	9	4,841	3·68	*178·29*	350	191, 191, 191, 231
				Sparkle of Gleneira ..	4001	23.11.23	273	15½	7,342	3·76	*276·40*	350	251, 232, 224, 280
				Mavis of Wattle Bank ..	9687	23.12.23	273	15½	4,858	4·04	*196·18*	200	
P. H. Lawrence, Tarrawarra	3	3	Jersey	Morocco's Linda of Rainga ..	11560	7.10.23	273	10½	5,768	4·60	265·57	200	
				Choirmaster's Queen of Rainga	12954	31.10.23	273	10	4,136	5·84	241·74	200	
				Lily Langtry of Rainga ..	12955	1.11.23	273	9	4,371	6·51	284·53	200	

* Withdrawn before completion of term.

STANDARD HERD TEST—*continued.*

Owner.	No. Completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
C. Lees, Lockington	7	1	Ayrshire	*Wogglette 2nd*	10702	27.9.23	152*	10	3,165	3·14	*99·36*	325	222
				Pearl of Glengowrie	3868	27.9.23	231	4	5,472	4·54	*248·32*	350	
				Bertha of Winslade	6979	29.9.23	239	4	6,856	4·66	*319·18*	350	379, 357
				Modesty of Valart	9741	15.10.23	235	4	6,422	3·58	*239·59*	350	221, 287
				Gay Dawn of Gleneira ..	9734	16.10.23	133*	13	2,864	4·35	*124·58*	225	156
				Nora 3rd of Gleneira ..	4993	2.11.23	118*	11	4,586	4·26	*195·26*	350	335, 251
				Swiss of Springburn Park ..	9754	7.11.23	218†	8	5,226	4·51	235·72	225	249
Mrs. E. M. Lennie, Tongala	5	4	Jersey	Merella 2nd of Yarra Brae ..	5668	3.10.23	273	12	6,050	6·24	377·33	350	330, 308, 309, 392
				Tea Rose of Tarnpirr ..	10312	9.11.23	273	6½	5,637	6·25	352·44	325	388, 312
				Primrose 2nd of Bonshaw ..	7102	17.11.23	273	10½	6,270	5·73	359·25	360	346, 310, 277, 275
				Show Girl of Tarnpirr ..	10311	26.11.23	273	16½	5,740	5·72	328·03	300	346, 393
				Tulip 5th of Bonshaw ..	7104	8 12.23	273	6½	5,665	4·47	*253·16*	350	237, 235, 366, 344
Agricultural High School, Leongatha	3	3	Jersey	Sunset Star of Dunalister ..	5927	5.10.23	273	15	7,989	5·09	406·45	350	350, 380, 495, 469, 442, 372
				Princess of Woorayl ..	11211	10.10.23	273	14½	5,635	6·19	349·08	200	
				Morning Star of Woorayl ..	11210	13.10.23	273	13	5,748	5·81	334·20	250	269
C. D. Lloyd, Narre Warren	6	4	Jersey	*Mercedes Sweet Queen of Glen Iris*	12966	7.10.23	273	6	3,681	4·93	*181·55*	200	
				Dream Girl of Woodside ..	6395	11.10.23	273	15½	7,037	5·61	394·68	350	
				Rye Cake of Glen Iris ..	7111	14.10.23	273	9	4,912	5·55	*272·50*	350	229, 246, 241
				Ginger Princess of Glen Iris ..	12964	15.10.23	273	6	3,647	5·84	212·82	200	
				Gipsy Love of Woodside ..	11257	15.10.23	273	16½	6,111	4·24	259·33	200	
				Golden Fern of Glen Iris ..	6058	25.10.23	273	16½	7,170	5·82	417·60	350	243, 332, 399, 361, 362
J. G. Lobb, Tooradin	3	1	Ayrshire	*Sunrise of Rythdale Park* ..	8122	7.10.23	273	13	5,082	4·28	*217·69*	250	
				Marcia of Holly Green ..	6993	10.11.23	273	12	6,887	4·04	278·54	250	228
				Daphne of Quarry Hills ..	9786	14.12.23	273	10½	6,130	3·88	*237·78*	275	253
Longerenong Agricultural College, Dooen	5	1	Ayrshire	Gloria of Longerenong ..	9790	1.10.23	261	4	5,372	4·80	257·75	250	
				Starette of Fern Hill ..	5949	17.10.23	273	8½	5,904	4·34	*256·45*	350	
				Virginia of Longerenong ..	9793	25.10.23	273	11	6,855	4·05	*277·32*	325	
				Marion of Willowvale ..	5349	15.11.23	273	7	5,532	3·93	*217·05*	350	
				Dolichos of Longerenong ..	9789	27.11.23	273	4½	5,718	4·27	*243·99*	275	

* Withdrawn before completion of term. † Herd withdrawn before test was completed.

STANDARD HERD TEST—*continued.*

Owner.	No. Completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
H. Luxton, Whittlesea	4	3	Jersey	Dunalister's Mannakin Noble Myrtle	10388	17.10.23	273	10	5,929	6·02	356·66	225	267
				Twylish's Twinkle of Marimba	10323	18.10.23	273	8½	6,444	5·12	329·71	225	290
				Bettina of Taraganda ..	8909	12.12.23	273	10½	4,734	4·92	*232·78*	350	
				Ozone of Terara	11506	16.12.23	273	14	4,661	5·53	257·84	200	
H. G. Lyon, Dundonnell	1	1	Jersey	Lady Jane of Elouera ..	10486	28.11.23	273	12	4,701	5·92	278·14	225	
C. G. Lyon, Heidelberg	10	10	Jersey	Maitland's Petal of Elouera ..	9703	2.10.23	273	24½	8,615	5·19	446·98	275	375
				Cantata of Banyule ..	9480	14.10.23	264*	12	7,642	5·69	434·86	300	308, 338
				Molly 6th of Banyule ..	7124	20.10.23	273	33	12,497	4·91	613·36	350	362, 412, 451
				Hawthorn 8th of Banyule ..	9484	21.10.23	273	15	7,189	5·57	400·26	275	354
				Silvermine 18th of Banyule ..	6080	10.11.23	273	27	11,443	5·30	606·50	350	358, 432, 449, 462
				Lotus 2nd of Banyule ..	11588	12.11.23	235†	12½	4,110	5·97	245·24	200	
				Mabel's Petal of Banyule ..	7122	22.11.23	273	22½	8,018	5·18	415·43	350	315, 347
				Molly 8th of Banyule ..	9499	28.11.23	273	28	9,886	5·44	538·14	300	304, 453
				Machree of Banyule ..	9490	6.12.23	273	21	6,842	5·99	409·88	300	277, 300
				Velveteen 5th of Banyule ..	11614	20.12.23	273	33	10,202	4·81	490·66	250	273
McFarlane Bros., Bundoora	13	8	Ayrshire	Queen of Ayr Brae ..	9974	28.9.23	273	9	5,846	4·21	246·34	200	
				Mavis of Ayr Brae	9963	2.10.23	273	16	7,355	4·40	323·88	250	273
				Queen Mary of Gleneira ..	6151	3.10.23	273	15	8,251	3·71	*305·33*	350	259, 288, 272
				Maisie of Ayr Brae ..	9967	3.11.23	273	11	5,599	4·21	235·68	200	
				Picture of Ayr Brae ..	9972	4.11.23	273	8½	5,655	4·16	235·33	200	
				Model of Ayr Brae	9970	7.11.23	273	8½	6,469	4·30	277·94	200	
				Mulberry of Ayr Brae ..	5405	14.11.23	250‡	5	7,610	4·01	*305·35*	350	203, 258, 286, 292
				Stylish of Ayr Brae ..	9976	27.11.23	273	11	4,214	4·48	*188·76*	200	
				Heather Belle of Ayr Brae ..	6640	29.11.23	273	6	8,585	4·22	362·12	350	281, 246, 322
				Vivian of Ayr Brae.. ..	12561	1.12.23	273	20½	7,963	4·64	369·26	200	
				Mulberry 2nd of Ayr Brae ..	7563	6.12.23	273	13½	7,029	4·19	*294·87*	300	248, 236
				Primrose of Ayr Brae ..	7564	7.12.23	254	4	7,101	4·62	327·94	300	222, 269
				Beryl of Ayr Brae	7560	9.12.23	244	4	6,985	4·25	*296·60*	300	300

* *Withdrawn through premature re-calving.* † *Sold before completion of term.* ‡ *Withdrawn before completion of term.*

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
K. McGarvie, Pomborneit	2	1	Jersey	*Pet of Greenwood*	7149	10.11.23	273	14	5,420	4·69	*254·27*	350	
				Graceful Duchess 27th of Melrose	14208	14.12.23	273	14	4,878	6·94	338·77	225	
H. V. McKay, Sunbury	5	4	Ayrshire	Isla of Ben Kell	6739	27.9.23	273	14	8,658	4·72	408·38	300	300
				Verbena of AyrBrae ..	9978	30.9.23	273	11	5,032	4·62	232·47	200	
				Nellie of Springfield ..	8876	15.10.23	223	4	4,227	4·24	*179·36*	200	
				Thelma of Roseleigh ..	12111	23.10.23	273	10½	6,660	4·43	295·15	200	
				Grace of Roseleigh	7301	19.11.23	273	4	7,425	4·00	296·60	275	
P. J. Maloney, Tongala	6	6	Jersey	Wattle of Springhurst ..	5408	4.10.23	273	16	11,720	4·71	552·48	350	287, 320, 292, 380, 476, 582
				Lady of Belgonia	9551	12.10.23	273	14½	7,459	5·15	383·78	300	243, 296, 299
				Marie 2nd of Belgonia ..	12995	18.10.23	273	8	5,709	5·45	311·07	200	
				Beauty 2nd of Bonshaw ..	7168	18.10.23	273	12	8,466	5·17	438·17	350	243, 357, 409
				Beauty of Belgonia ..	9548	1.11.23	273	4	7,444	5·22	388·57	275	400, 399
				Bonnie of Belgonia ..	9549	18.11.23	273	10½	6,972	5·28	368·45	275	334, 399
W. Meredith, Ondit	1	Nil	Ayrshire	*Affinity of Oakbank* ..	5357	1.10.23	177*	6	3,248	4·21	*136·82*	350	214, 191, 168
T. Mesley, Dalyston	4	4	Jersey	Peggy Pride of Warenda ..	11647	1.10.23	273	14	5,908	6·97	411·74	250	298, 374
				Cello of Warenda	13376	25.10.23	273	17	6,692	6·44	431·20	225	
				Lily of Rosemont	11926	7.11.23	273	7½	6,939	6·20	430·35	250	313
				Ragtime of Warenda ..	7196	16.11.23	273	16½	8,459	6·57	555·84	350	427, 482, 616
D. C. Miller, Agnes	2	2	Jersey	Rosebud of Kirkhill ..	13004	12.10.23	273	9½	3,908	5·17	202·04	200	
				Merry Lass of Hill Crest ..	13233	14.11.23	273	7½	4,810	5·17	248·49	200	
E. J. Moore, Cowes	1	Nil	Jersey	*Fairy Bell of Rochdale* ..	9793	26.9.23	273	7	4,385	5·17	*226·84*	300	213, 243

* Withdrawn before completion of term.

Standard Herd Test—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
Mrs. L. Orchard, Graham Vale	8	4	Jersey	Daisy of Jersey Vale ..	10355	26.9.23	273	12½	5,275	5•59	294•90	225	234
				Snowdrop of Jersey Vale ..	11659	28.9.23	273	17	4,981	5•73	285•47	225	164
				Lily 2nd of Jersey Vale ..	11658	3.10.23	273	21	5,574	6•04	336•43	225	146
				Doreen of Jersey Vale ..	13763	18.11.23	273	10½	2,634	5•15	*135•59*	200	
				Daffodil of Jersey Vale ..	7220	14.12.23	273	11	5,304	5•36	*284•17*	350	229, 251, 251
				Tulip of Jersey Vale ..	10360	14.12.23	273	5	5,815	5•18	*301•43*	350	260, 275
				Buttercup of Jersey Vale ..	11657	23•12•23	273	18½	6,104	5•29	322•62	225	187
				Lily of Jersey Vale	10356	24.12.23	273	4	5,615	4•97	*278•90*	350	178, 137, 223
T. H. Payne, Kilmore	4	3	Red Poll	Woodburn Gratis 2nd ..	225AA	16.10.23	253	4	4,453	5•17	230•19	225	116
				Henham Dorcus (Imp.) ..	..	4.11.23	273	21	8,338	3•56	297•05	225	
				Gratis	218AA	10.11.23	273	12	6,916	4•14	*286•31*	350	325, 284, 225
				Necton Effigy (Imp.) ..	..	22.11.23	273	14	6,416	4•15	266•17	225	
D. Peter, Dandenong	5	3	Jersey	*Dunalister Noble Czarina* ..	10403	15.10.23	273	10½	6,481	5•15	*333•55*	350	375
				Dunalister Mannakins Attraction	10381	14.11.23	273	12½	5,127	5•41	277•19	250	
				Dunalister Northwood Bright Lass	10403	14.11.23	273	7½	4,459	5•68	*253•24*	275	
				Vanilla 16th of Melrose ..	11782	18.11.23	273	10	5,051	6•24	315•03	250	219
				Dunalister Perrees Tissue 2nd	10429	15.12.23	273	17½	5,883	6.55	385•04	350	341
H. Petersen, Korumburra	2	2	Jersey	Golden Fern of Laringa ..	9634	9.10.23	273	12	6,144	6•54	401•95	350	
				Dulcette of Laringa ..	Not yet allotted	3.11.23	273	21½	7,442	4•98	370•30	225	
J. Phillips, Murraydale	1	1	Jersey	Jessie 11th of Ferntree Vale ..	9638	20.11.23	247*	22	9,679	4•25	411•64	350	296, 384, 354
J. Plattfuss, Tongala	1	1	Friesian	Doris 2nd of Greenvale ..	Appex.	26.12.23	273	13½	4,834	4•71	227•69	200	
R. Purnell, Moriac	2	Nil	Jersey	*Woodruff Mystic Maid* ..	10517	9.12.23	273	11½	3,379	6•72	*226•94*	250	2710
				Purity 5th of Melrose ..	7548	13.12.23	160	4	2,709	5•73	*155•38*	350	177, 143

* Withdrawn owing to premature re-calving.

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
Miss H. E. Raleigh Pakenham Upper	1	1	Jersey	Cora of Elouera	12234	28.9.23	273	4	3,886	5•83	226•60	200	
R. Ralston, Mogloneby, near Euroa	3	2	Ayrshire	Poppy of Ben Kell	4584	28.9.23	273	30	12,879	5•37	692•23	350	324, 412, 286, 481
				Pardon of Ben Kell ..	5753	29•9.23	273	10½	7,959	3•75	*298•72*	350	231, 336, 285
				Winnie of Ben Kell.. ..	6744	22.10.23	239	4	7,497	4•20	315•17	300	259, 379
Red Cross Farm, Bundoora	2	2	Friesian Burnbank	Burnbank Milkman's Cora ..	1209	6.10.23	265*	8	7,915	3•58	283•41	275	
				Springfield La Polka ..	1215	12.11.23	273	13½	6,066	4•26	258•38	200	
Miss B. B. Reid, Bundoora	2	2	Jersey	Jubilee Wattle	10460	8.11.23	273	19½	7,969	5•59	445•37	325	229, 332
				Jubilee Azalia Winks ..	7338	7.12.23	256†	18	6,423	6•03	387•15	350	353, 387, 352
A. A. Richardson, Warragul	8	7	Jersey	Stumpy of Clarendon Eyre ..	12198	18.10.23	273	23	8,414	4•42	372•28	325	
				Rose of Clarendon Eyre ..	9583	24.10.23	273	12½	6,945	5•64	391•35	350	
				Leonie 3rd of Clarendon Eyre	11654	11.11.23	273	11	4,163	5•62	233•91	200	
				Daisy 3rd of Holmwood ..	5143	16.11.23	273	7½	5,988	5•16	*309•26*	350	
				Ditny of Clarendon Eyre ..	11651	16.11.23	273	10	4,703	6•05	284•49	200	
				Graceful Duchess 15th of Melrose	6301	1.12.23	273	15	6,624	6•45	426•91	350	334
				Daisy 8th of Melrose ..	10362	12.12.23	273	22	7,730	5•46	421•72	350	
				Leonie 2nd of Clarendon Eyre	9579	20.12.23	233‡	11½	4,611	5•50	253•01	250	
W. S. Richardson, Riddell	1	1	..	Lady Lottie of Northumbria..	10321	4.10.23	273	5½	5,409	4•57	247•01	225	
C. L. Rigby, Lower Ferntree Gully	2	Nil	Ayrshire	*Dora of Netherbrae*	10213	2.10.23	251	4	6,099	3•36	*204•76*	250	182
				Gladys of Netherbrae ..	10216	20.12.23	273	15	4,438	3•90	*172•83*	200	

* Withdrawn before completion of term. † Died before completion of term. ‡ Sold before completion of term.

Standard Herd Test—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
Miss S. L. Robinson, Kew	6	3	Jersey	Kyora Merry Mike's Mayflower 2nd	13777	26.10.23	273	10	4,271	5·47	233·49	200	
				Kyora Velveteen 2nd ..	13778	26.10.23	273	10	4,587	5·21	239·16	200	
				Jessie 16th of Melrose ..	5547	10.11.23	273	9	6,311	5·54	*349·33*	350	288, 329, 316
				Sweet Briar of Hill Crest ..	7046	28.11.23	273	14½	6,343	5·07	*321·61*	350	
				Kyora Velveteen	10466	21.12.23	273	9	4,570	5·58	*255·11*	325	245, 237
				Starbright of Ruhbank ..	12229	21.12.23	273	10½	5,855	5·27	308·68	250	192
G. Rowe, Kardella	1	Nil	Jersey	*Joy of Hill Crest*	10468	19.11.23	273	9	4,098	5·04	*206·56*	..	205, 222
S. Russell, Tongala	3	Nil	Friesian	*Dina*	Appendix	1.10.23	267	4	8,680	3·69	*320·13*	350	421
				Tongala Queenie	Appendix	30.11.23	245	4	5,816	5·72	*332·90*	350	406
				Dimple of Craigneil ..	1070	30.11.23	273	17	9,064	3·23	*292·83*	300	311, 356
Agricultural High School, Sale	2	1	Ayrshire	Gladness of La Trobe ..	8128	26.10.23	273	10½	5,132	4·10	210·38	200	
				Young Gladys of La Trobe ..	4813	8.12.23	273	4	4,138	4·04	*167·11*	350	166, 242, 189, 212
W. A. Sandles, Mt. Best, near Toora	2	2	Jersey	Lady May of Ferndale ..	9697	14.11.23	273	16½	7,314	4·85	354·84	350	
				Dot of Franklin Park ..	10484	28.11.23	273	14	4,791	5·31	254·66	250	
A. H. Schier, Kernot	16	9	Ayrshire	Adella of Inverleigh ..	7706	30.9.23	273	5	8,202	4·20	341·42	275	267
				Scotswood Mignonette ..	10308	3.10.23	251	4	3,210	4·72	*151·38*	200	
				Mabel of Simpson House ..	5127	5.10.23	249	4	6,686	3·72	*248·91*	350	265, 268, 269, 213
				Dolly Brown of Inverleigh ..	5854	5.10.23	273	13	8,830	4·15	366·01	350	226, 253, 205, 284
				Idahlia of Wethersdane ..	9612	7.10.23	273	8	5,689	4·29	244·11	225	
				Scotswood Sweet Marie ..	10320	10.10.23	226	4	3,835	3·73	*143·05*	250	168
				Scotswood Adeline	10291	10.10.23	262	4	5,294	4·43	234·30	200	
				Scotswood Belle	10292	19.10.23	273	7	5,223	3·91	204·27	200	
				Scotswood Reason	10316	22.10.23	273	8	5,001	3·78	*188·97*	200	
				Silverine of Inverleigh ..	5864	17.11.23	245	4	7,050	4·41	*311·08*	350	202, 265, 276, 310
				Dolores 2nd of Banyule ..	10286	22.11.23	244	4	5,565	4·96	*276·35*	325	180, 231
				Daisy Brown of Inverleigh ..	7708	23.11.23	273	13	7,382	4·31	318·35	300	231, 210
				Queen of Scots 2nd of Banyule	10290	24.11.23	223	4	7,111	4·82	343.05	325	216, 282
				Gold Point 2nd of Banyule ..	10288	5.12.23	273	9½	7,472	4·96	370·70	300	224, 273
				Boronia 2nd of Pine Grove ..	4626	6.12.23	217	4	5,882	4·67	*274·58*	350	269, 226, 231, 279, 239
				Scotswood Duchess ..	10295	21.12.23	273	10½	4,365	4·94	215·64	200	

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
A. Schliphalius, Kilmany South	3	3	Jersey	Blossom 6th of Melrose ..	13420	30.10.23	273	17	5,779	5·76	332·63	200	
				Prime Donna of Cloverfield ..	11708	7.11.23	273	7	4,039	5·34	215·65	200	
				Princess Ida of Cloverfield ..	11709	27.11.23	273	17	4,936	5·24	258·74	200	
O. J. Syme, Macedon	2	1	Friesian	*Pearl of Friesland Park* ..	306	26.9.23	273	11	8,962	3·46	*309·94*	350	295, 433, 354, 296, 324
				Bolobek Agnes	1112	18.11.23	273	18½	9,372	3·22	301·94	300	298
J. R. Telford, Estate, Kyabram	2	Nil	Ayrshire	*Adella of Hyde Park* ..	10505	13.10.23	273	6½	3,779	4·86	*183·53*	200	
				Adora of Fernhill	5924	21.10.23	273	16	7,685	4·12	*316·26*	350	349, 371
W. Tendeson, Lilydale	2	2	Jersey	Silver Pearl of Glenwood ..	13405	26.9.23	253*	9	3,410	6·17	210·23	200	
				Lady Choice of Glenwood ..	13403	28.9.23	242*	9	3,500	6·60	231·60	200	
L. W. Thompson, Pakenham	1	1	Jersey	Garenne 4th of Warenda ..	9565	14.12.23	273	28½	8,901	5·57	495·73	300	434, 429
J. H. Thorburn, Woodend	2	Nil	Ayrshire	*Oatlands Margaret*	10526	8.10.23	273	7½	3,277	4·46	*146·15*	200	
				Oatlands Maggie	6928	30.10.23	212	4	4,995	4·07	*203·28*	325	205, 243
F. Trevaskis, Tongala	2	2	Jersey	Romany Girl 2nd of Tarnpirr	7062	2.10.23	273	6	8,372	5·36	448·49	350	243, 280, 363
				Joy Bell of Ballara ..	11721	18.12.23	273	12	5,072	5·98	303·49	200	248
J. F. Tuckey, Alberton	2	1	Ayrshire	*Kin of Tregorland*	10554	14.11.23	273	6	4,238	4·44	*188·08*	200	
				Titchie of Tregorland ..	10558	6.12.23	273	10	4,298	4·78	205·24	200	
D. Wadelton, Tarwin	2	2	Ayrshire	Destiny of Gleneira.. ..	11732	8.10.23	273	17½	7,950	4·23	336·61	200	
				Columbine of Gleneira ..	11730	12.10.23	273	24½	9,534	3·91	373·11	200	
A. Wallace, Bendigo	1	1	Ayrshire	Lottie of Golden Vein ..	3079	21.10.23	273	26	10,107	4·09	413·70	350	349

* *Herd withdrawn.*

Standard Herd Test—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
								lbs.	lbs.		lbs.	lbs.	
A. L. N. Walter, Little River	3	3	Jersey	Rosebud of Tarnpirr ..	4210	12.10.23	254*	13	6,399	5·69	370·17	350	276, 377, 347, 356
				Flower 14th of Melrose ..	10513	10.12.23	273	17	6,000	5·86	351·77	325	334, 356
				Flower of Paradise	11737	24.12.23	273	11½	4,410	5·69	250·86	225	238
Agricultural High School, Warragul	3	1	Red Poll	Gipps Wendy	861B	25.10.23	258*	25	7,253	3·62	262·23	250	200
				Gipps Eunea	783A	2.12.23	250	4	4,021	4·08	*164·28*	200	
				Pendant	556D	20.12.23	224	4	5,734	4·22	*242·02*	350	318
H. L. Webb, Sunbury	4	4	Ayrshire	Lily's Queen of Holly Green..	11495	11.10.23	273	23	10,640	3·80	403·78	225	252
				Alice of Holly Green ..	11493	7.11.23	273	17	6,250	4·16	259·84	200	
				Myra of Holly Green ..	11499	17.11.23	273	17	6,191	4·18	258·76	200	
				Rose Bloom of Holly Green ..	6957	2.12.23	273	11½	7,364	3·92	288·38	275	301
F. E. Wilcox, Lilydale	2	2	Jersey	Werribee Kinglark Bluebell ..	12243	9.11.23	273	16	6,308	6·60	416·24	250	300
				Werribee Wyandotte Cream ..	12244	11.12.23	273	24	8,229	5·77	475·16	250	334
J. Wills, Bacchus Marsh	1	1	Friesian	Rosie 55th of Lilydale ..	1140	18.11.23	273	31½	9,732	3·55	345·20	275	235
W. Woodmason, Oakleigh	2	2	Jersey	Vanilla 11th of Melrose ..	7550	20.10.23	273	15½	7,265	5·77	419·34	350	303, 362, 369, 424, 329
				Empire 9th of Melrose ..	..	27.10.23	273	15	5,921	5·79	342·72	225	

* Withdrawn before completion of term.

ERRATA.

STANDARD HERD TEST, 1923-24.

On page 544 of this *Journal* for September last, in the Averages in Detail of Herds which averaged over 300 lb. of butter fat per cow, the 29th herd should have read as follows:—

Herd Order of Merit.	Owner.	Breed.	Average Yield without any Allowance.						Herd Yield with all handicap allowances.
			Heifers.		Post Heifers.		Mature Cows.		
			No. in Herd.	Average Butter Fat.	No. in Herd.	Average Butter Fat.	No. in Herd.	Average Butter Fat.	
29	A. Joshua	Jersey ..	7	lbs. 286·64	5	lbs. 294·40	1	lbs. 225·91	lbs. fat. 316·45

Messrs. McFarlane Brothers' herd thus becomes 30th instead of 29th in the order of merit.

On page 544 the number 8 given as the number of mature cows in Messrs. Flack and Sewell's herd should have read 5.

On page 549 in the record of "Blush of Willow Park," No. 32 in the order of merit, the milk-yield should have read 12,114 lb., and the average test 3.95.

On page 550 the owner of No. 71, Foxglove 2nd of Tarnpirr, should have read Mrs. D. Stark instead of Finn Brothers.

HONEY AS FOOD.

More than 100 lb. of sugar on the average is annually consumed by every man, woman, and child in the United States. Of course, many use less than the average, but to make up for it some consume several times as much. It is only within the last few centuries that sugar has become known, and within the last generation or so that refined sugars have become so low in price that they may be commonly used in the poorest families. Formerly honey was the principal sweet, and it was one of the items sent as a propitiatory offering by Jacob to his unrecognized son, the chief ruler of Egypt, 3,000 years before the first sugar-refinery was built.

Craving for Sweets.

It would be greatly for the health of the present generation if honey could be at least partially restored to its former place as a common article of diet. The almost universal craving for sweets of some kind shows a real need of the system in that direction, but the excessive use of sugar brings in its train a long list of ills. Besides the various disorders affecting the alimentary canal, a most fatal disease of the kidneys is credited with being one of the results of sugar-eating. When

cane-sugar is taken into the stomach, it cannot be assimilated until first changed by digestion into grape-sugar. Only too often the over-taxed stomach fails to properly perform this digestion; then comes sour stomach and various dyspeptic phases. Professor A. J. Cook says:—

"If cane-sugar is absorbed without change it will be removed by the kidneys, and may result in their break-down; and physicians may be correct in asserting that the large consumption of cane-sugar by the twentieth century man is harmful to the great eliminators—the kidneys—and so a menace to health and long life."

Now, in the wonderful laboratory of the bee-hive there is found a sweet that needs no further digestion, having been prepared fully by those wonderful chemists—the bees—for prompt assimilation without taxing the stomach or kidneys. As Professor Cook says: "There can be no doubt but that in eating honey our digestive machinery is saved work that it would have to perform if we ate cane-sugar; and in case it is over-taxed and feeble, this may be the respite that will save from a break-down."

The late A. I. Root said: "Many people who cannot eat sugar without having unpleasant symptoms follow will find by careful test that they can eat good, well-ripened honey without any difficulty at all."

Honey the Most Delicious Sauce.

Not only is honey the most wholesome of all sweets, but it is the most delicious. No preparation of man can equal the delicately flavoured product of the hive. Millions of flowers are brought under tribute, presenting their tiny cups of dainty nectar to be gathered by the busy rifiers; and when they have brought it to the proper consistency, and then stored it in the wondrously wrought waxen cells, and sealed it with coverings of snowy whiteness, no more tempting dish can grace the table at the most lavish banquet; and yet its cost is so moderate that it may well find its place on the tables of the common people every day in the week.

It is Economy to Use Honey.

Indeed, in many cases it may be a matter of real economy to lessen the butter-bill by letting honey in part take its place. A pound of honey will go about as far as a pound of butter; and if both articles be of the best quality the honey will cost much the less of the two. Often a prime article of extracted honey (equal to comb-honey in every respect except appearance) can be obtained for about half the price of butter. Butter is at its best only when "fresh," while honey, properly kept, remains indefinitely good—no need to hurry it out of the way for fear it may become rancid.

Give Children Honey.

Professor Cook says: "We all know how children long for candy. This longing voices a need, and is another evidence of the necessity of sugar in our diet. . . . Children should be given all the honey at each meal-time that they will eat. It is safer, will largely do away with the inordinate longing for candy and other sweets, and in lessening the desire doubtless diminish the amount of cane-sugar eaten. Then if cane-sugar does work mischief with health, the harm may be prevented."

Ask the average child whether he will have honey alone on his bread or butter alone, and almost invariably he will promptly answer, "Honey." Yet seldom are the needs or the tastes of the child properly consulted. The old man craves fat meat; the child loathes it. He wants sweets, not fat. He delights to eat honey; it is a wholesome food for him, and is not expensive. Why should he not have it?

Honey Best to Sweeten Hot Drinks.

Sugar is much used in hot drinks, as in coffee and tea. The substitution of a mild-flavoured honey in such uses may be a very profitable thing for the health. Indeed, it would be better for the health if only hot drink were what is called in Germany "honey-tea"—a cup of hot water with one or two tablespoons of extracted honey. The attainment of great age has in some cases been attributed to the life-long use of honey-tea.

Comb and Extracted Honey.

At the present day honey is placed on the market in two forms—in the comb and extracted. Extracted honey is simply honey thrown out of the comb in a machine called a honey-extractor. The combs are revolved rapidly in a cylinder and centrifugal force throws out the honey. The comb remains uninjured and is returned to the hive to be refilled again and again. For this reason extracted honey is usually sold at a less price than comb-honey, because each pound of comb is made at the expense of several pounds of honey.

Different Kinds of Flavours.

Many people think "honey is honey"—all just alike; but this is a great mistake. Honey may be of good, heavy body—what bee-keepers call "well-ripened"—or it may be quite thin. It may also be granulated or candied, more solid than lard. It may be almost as colourless as water, and it may be as black as the darkest molasses. The flavour of honey varies according to the flower from which it is obtained. It would be impossible to describe in words the flavours of the different honeys. You may easily distinguish the odour of a rose from that of a carnation, but you might find it difficult to describe them in words so that a novice smelling them for the first time would tell which was which. But the different flavours in honey are just as distinct as the odours in flowers. Among the light-coloured honeys are white clover, linden (or basswood), sage, sweet clover, alfalfa, firewood, or willow-herb, &c., and among the darker are found heartsease, magnolia (or poplar), horsemine, buckwheat, &c.,

Care of Honey—Where to Keep It.

The average housekeeper will put honey in the cellar for safe-keeping—about the worst place possible. Honey readily attracts moisture, and in average cellars extracted honey becomes thin, and in many sour; with comb-honey the case is still worse, for the appearance as well as the quality is changed. The beautiful white surface becomes watery and darkened, drops of water ooze through the capping, and weep over the surface. Instead of keeping honey in a place moist and cool, keep it dry and warm, even hot. It will not hurt to be in a temperature of even 100°. Where salt will keep dry is a good place for honey. Few places are better than the kitchen cupboard. Up in a hot garret next

the roof is a good place, and if it has had enough hot days there through the summer it will stand the freezing of winter; for under ordinary circumstances freezing cracks the combs and hastens granulation or candying.

Granulated Honey—How to Reliquefy.

When honey is kept for any length of time it has a tendency to change from its clear liquid condition and becomes granulated or candied. This is not to be taken as any evidence against its genuineness, but rather the contrary. Some prefer it in the candied state, but the majority prefer it liquid. It is an easy matter to restore it to its former liquid condition. Simply keep it in hot water long enough, but *not too hot*. If heated above 160° there is danger of spoiling the colour and ruining the flavour. Remember that honey contains the most delicate of all flavours— that of the flowers from which it is taken. A good way is to set the vessel containing the honey inside another vessel containing hot water, not allowing the bottom of the one rest directly on the bottom of the other, but putting a bit of wood or something of the kind between. Let it stand on the stove, but do not let the water boil. It may take half a day or longer to melt the honey. If the honey is set directly on the reservoir of a cook-stove it will be all right in a few days. In time it will granulate again, when it may again be melted.

—Reprinted from the *Agricultural Journal*, British Columbia.

ORCHARD AND GARDEN NOTES.

E. E. Pescott, F.L.S., Pomologist.

The Orchard.

As a preventive against codlin moth, apple and pear trees should be sprayed with arsenate of lead whenever there is danger from the prevalence of the moth. One of the secrets of success in codlin moth spraying is the destruction of as many as possible of the insects of the first brood. Thus, if particular care is given to the early sprayings, keeping the fruit covered with spray for a month or six weeks after setting, this result is easily accomplished. Some growers prefer to gather all fruit infected by the first brood, spraying only for the second and later broods. Even if all the fruits attacked are gathered, which very rarely happens, the grower suffers from the loss of fruit, which he can ill afford, unless his crop be a heavy one.

Another feature for consideration is the fact that the presence of any arsenical spray on the foliage is responsible for the destruction of the pear and cherry slug, root-borer beetle, and all forms of leaf-eating insects.

Spraying the cherries for the slug will now be necessary. Arsenate of lead may be used, provided the fruit is not far advanced. Hellebore, and also tobacco water, are effective against this pest.

Cultivation.

All orchard soils should be kept well worked during the summer months. It is very essential that the trees should have an abundant supply of moisture during the whole of the growing season. This will mean an increased supply of fruit buds for the next season, consequently the frequent summer cultivation of the soil will be a necessity if the health and vigour of the trees are to be maintained.

Excessive transpiration is often the cause of loss of young trees and of new grafts. They are found to part with a large amount of moisture, and are not able to obtain or retain sufficient for their nourishment; they then very soon wither and die. The soil around these should always be kept well stirred; they may also be given a good straw or grass mulching, and an occasional overhead sprinkling will greatly benefit them.

The planting out of citrus trees may be continued, sheltering the tender plants from winds with hessian or breaks of scrub.

The general aims in summer cultivation should be to maintain a good loose earth mulch during the whole season, and to keep down all weeds and useless orchard growths.

Pruning.

Summer pruning may now be commenced, particularly on apple, pear, and plum trees. The removal or reduction of surplus leader growths, the shortening of unduly long laterals, and the thinning out of crowded shoots, will all tend to strengthen other parts of the tree and to increase the development of new fruit buds.

The Vegetable Garden.

Tomatoes will require much attention at this time of the year. If the plants have been well looked after, they should be making vigorous growth. It will be to advantage to tie the plants to stakes, training them to two or three main growths, and pinching out all laterals as they come.

The plants should be well watered, and occasionally a handful of bonedust and blood manure mixed should be forked in around the roots. Where stable manure is used, it should be used as a mulch, forking it in every three or four weeks, and making a fresh mulch.

It is now recommended that occasional doses of sulphate of potash as a manure for tomatoes will help the plants to resist the spotted wilt.

All plants of the cucumber and melon family should now be constantly supplied with ample water. Pinch out unnecessary lateral growths, and also the terminals.

The following seeds may now be sown:—French beans, cabbage and cauliflower for winter crops, parsnip, lettuce, and celery.

The side shoots of celery plants should be removed, afterwards earthing up the plants. Asparagus beds should be top-dressed, and allowed to grow without any more cutting. The vegetable beds will need frequent forking and hoeing to keep the soil sweet, and to keep down all weeds.

The Flower Garden.

Plant out dahlias this month; green plants early, and plants grown from tubers later in the month. Water well at planting, and keep well cultivated afterwards.

Rose bushes and beds may be given a good mulch with light stable manure, straw, grass, or lawn clippings. The beds should be kept rather dry, so as to allow the plants to rest before the autumn period of growth.

Sow seeds of cosmos, asters, zinnia, balsams, cockscomb, coreopsis, salpiglossis, and other late summer and autumn blooming annuals.

Cut down delphiniums that have yielded their first crop of flowers, so as to allow a succession of flowers to come.

Daffodil, hyacinth, tulip, ranunculus, anemone, and other bulbs and tubers may be taken up and stored; while gladioli corms may still be planted.

The garden must be kept well watered and cultivated, so as to tide the plants over the hot and dry season.

REMINDERS FOR JANUARY,

LIVE STOCK.

Horses.—*Stabled.*—Over-stimulating and fattening foods should be restricted. Water should be allowed at frequent intervals. Rub down on coming into stables in an overheated condition. Supply a ration of greenstuff, where possible, to all horses. *Brood mares* should be well fed on succulent food if available; otherwise, oats and bran should be given. *Foals* may with advantage be given oats to the extent of 1 lb. for each month of age daily. Provision should be made for shade shelter for paddocked horses.

Cattle.—Provide succulent fodder and plenty of clean water and shade. Provide "lick" in trough, consisting of salt 20 lbs., lime 20 lbs., superphosphate 5 lb., and sulphate of iron 1 lb. Limewash the cow bails, it helps to keep down flies. Provide calves, if possible, with good grass run, or lucerne hay or oats in a trough. Now that the Dairy Produce Act is in operation it is necessary to take proper care of milk and cream, as it must be paid for according to its quality. Utensils must be kept clean and well tinned. Cream must be cooled and kept cool and delivered fresh to the factory. Write to the Department of Agriculture for "Don'ts for Dairymen."

Pigs.—Supply short bedding in well-ventilated styes. Keep styes clean and dry, and feeding troughs clean and wholesome. Sows suckling young should be well fed to enable them to produce plenty of milk. Give young pigs pollard and skim milk in separate trough as soon as they will take it, and keep them fattening from the start to get them off as early as possible. Give a tablespoonful of bone meal or superphosphate per 100 lbs. live weight in food daily. If pigs are lousy, dress with kerosene emulsion or sulphur and lard, rubbing well into

crevices of skin, and disinfect styes. Plenty of water should be available for them to wallow in in hot weather.

The automatic feeder described and illustrated in Bulletin 16 is proving a great success.

SHEEP.—The various breeds of ewes come in season approximately as follows:—Merinoes and comebacks, November and December; crossbreds, January and February; pure British breeds, February and March. These dates will vary with the locality, i.e., in the north of Victoria ewes generally come in season from one month to six weeks earlier than in the south-western districts or in South Gippsland. Be sure that there are ample rams, that is to say, from 2 to 3 per cent. If possible, use 2, 4, or 6-tooth rams. If older rams are used, it is preferable to join them with young ewes, and rams should be in proportion of 3 per cent. Always select rams with width and substance, true to breed, with type and wool qualities pronounced. (Do not use crossbred rams as they will not produce good even lambs.) If an ample number of rams be available, use the best first and the seconds afterwards. The mating period should not exceed eight weeks. It is well to have fresh rams after the first five weeks. The ewes should be in good condition at mating time, but not too fat. To start the rams working, yard the ewes with the rams for a few nights at the outset of joining. The ewes will come into season much quicker if flushed with good food just before joining the rams.

Breed from only good-fleeced, roomy and sound-mouthed ewes. Keep in view wool-production as well as a good-shaped carcass. Lamb, mutton, and wool will be amongst the foremost commodities in Australia for some time to come, and with the prices ruling for these products at present, every sheep-owner should make determined efforts to improve his flock. Two-tooth ewes, if well-grown, may be bred from; this particularly applies to crossbreds, and pure English sheep; also to the two-tooth ewes of a Merino flock if they are large enough, but they must be well treated throughout.

The second dipping of tick and louse infected sheep should be undertaken during January, but care should be taken not to dip during very hot weather.

Where the grass is dry and hard, all ewes that are hollow and "off their feed" should be given a purgative drench or pill. If weaners are scouring, worm-pills should be given. Grown sheep showing unhealthy discharge should be given a worm drench, consisting of—

1 oz. white arsenic.
2 oz. carbonate of soda.

The drench should be prepared as follows:—Boil both the arsenic and the soda in one quart of water steadily for two minutes; then skim off scum and add sufficient water to make the liquid up to three gallons. Two ounces of the liquid should be allowed for each full-grown sheep; for weaners, 1½ oz. Keep sheep yarded without food for at least 24 hours before drenching, and repeat at intervals of eight days if trouble is persistent. Three doses may be given without material harm.

Attend to health of sheep generally. Do not overstock. Ensure an ample fresh-water supply. Healthy well-fed sheep rarely get fly-blown.

POULTRY.—Separate the sexes; the cockerels should now be fattened and marketed. Grade the young stock according to age and size, otherwise the younger birds will not thrive. Avoid overcrowding. Do not force pullets too much with animal food; build them up with a good variety of food, and give but little meat. Increase the green food; thoroughly spray houses and perches with an emulsion of kerosene and soapsuds, or a solution of carbolic acid 1 in 60. Keep water vessels in shady spot, and renew water twice daily.

BEE-KEEPING.

January being usually the hottest month of the year, combs may melt down on very hot days in hives made out of cases unless they are in some way shaded during the hottest part of the day. If bags are used, they should be

removed again as soon as the hot weather is over, because they afford hiding places for bee moths, spiders, and other enemies of bees.

With factory-made or other hives, the walls, cover, and floor of which are of timber not less than ⅞ inch in thickness, there is no need to provide artificial shade, provided the entrance is of sufficient width and the hive of ample capacity to accommodate the bees. The ordinary entrance, which is 5-16 inch deep and the width of the hive, is generally sufficient. It may, however, be enlarged by raising the hive another ¾ inch or so in front should there be much clustering out of the bees.

Top ventilation should not be given; it is not necessary, and the bees dislike it. Bees control the temperature inside the hive by fanning at the entrance and by moistening the combs with water.

During this and the next month bees generally supersede queens in their third year, or which are failing during the second. Queens are sometimes still quite prolific, but by some means the bees know that they would not live through the coming winter, and that it is necessary to raise a successor while drones are still flying, so that the young queen may not remain unfertilized. The queen-cells, which bees construct when superseding, are few—one or two, rarely more. They are generally built on the face of one of the outer combs, often one containing no other brood—not on the edge of a brood comb, as in the case of swarm cells.

Supersedure queen cells must not be mistaken for swarm cells and destroyed, otherwise the hive may eventually become queenless.

All colonies should be examined to see that each has a laying queen. It sometimes happens that the virgin queen of a swarmed stock is lost on her mating flight, and as there is then no young brood in the hive from which to raise another queen, the colony becomes hopelessly queenless. Therefore, whenever neither young brood nor eggs are seen in a hive, a comb of young brood or eggs from some other colony should be given to the bees. If, on examination a few days later, queen-cells have not been raised, then there is a virgin queen in the hive which may be expected to commence laying within a fortnight at the outside.

CULTIVATION.

FARM.—Get all crops harvested and stacked as soon as possible. Horse-hoe maize, potatoes and other summer crops. See to insurance of stacks of grain and hay.

VINEYARD.—Summer bud or *Yema* grafting may be practised in January, though February is the usual month. (See Bulletin No. 35, obtainable on application.) This is the slackest month in un-irrigated vineyards—all ordinary work should be completed before Christmas. It is only exceptional operations, such as scarifying after rain, sulphuring in case of odium, or spraying for downy mildew, that must be carried out. Should heavy rain fall it will be necessary to repeat spraying in order to insure adequate protection The final spraying, to protect foliage, and thus permit fruit to ripen, should be applied in January; the exact date will depend on the weather. In irrigated vineyards the application of water, and the cultivation it necessitates, require attention. Make it a rule to spray immediately *before* watering.

Cellar.—Fill up regularly and keep cellar as cool as possible. Towards end of month commence to make preparations for the coming vintage.

ORCHARD.—Keep the soil well scarified and weed free. Cultivate after irrigation or rain. Do not allow the surface to become caked. Spray against codlin moth, pear slug, vine caterpillar, and woolly aphis. Summer prune strong growing shoots and laterals.

VEGETABLE GARDEN.—Plant out all seedlings, when ready, from former sowings. Stir and mulch the surface. Dig each plot as it becomes vacant. Sow seeds of cauliflower, cabbage, peas, French beans, Kohl Rabi, &c.

FLOWER GARDEN.—Keep the soil moist and cool by watering, hoeing, and mulching. Stake tender and lengthy plants. Water and shade young plants. Sow pansy, Iceland poppy, cosmos, aster, &c.

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EXCELLENT FOR HAY
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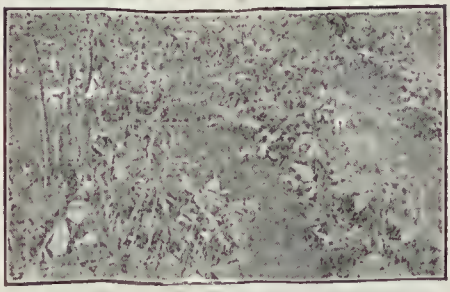
The Soy Bean plant is as high in feeding value as Lucerne, and may be used in the form of hay, pasture, silage, or soilage, or as a protein concentrate. Soy Beans grown alone for seed or hay solve the problem of preparation of Winter wheat ground, since they leave the soil in excellent condition for wheat with no preparation whatever. For hay or fertilizer, sow 60 to 90 lb. per acre; or, if sown between rows of maize, 60 lb. per acre. **1/-** lb.; **50/-** bushel (60 lb.).

COW PEAS

Excellent Summer Fodder

Great Soil Improver

Drought Resistant



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Makes Good Land more Productive

Enormously productive both of vine and peas; of exceptional value for feeding Hogs and Cattle. The Cow Pea is a wonderful gatherer of Nitrogen, and as a means of adding humus to the soil is easily the superior of any nitrogen gathering legume. Sow 1 to 2 bushels per acre broadcast, or in drills 3 ft. apart, ½ bushel per acre. **8d.** lb.; **70/-** per cwt.

FIELD LUPINS

A Remarkable Crop Raiser

Sow from November to March at the rate of 1½ bushels per acre for mulching purposes. If sown early in January, and ploughed in in May, Oats or other crops can then be sown. By following this method a satisfactory crop is assured without the loss of a season. One good crop ploughed in will give two satisfactory crops in return. **9d.** lb.; **40/-** bushel (60 lb.).

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Est. 1850

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Is set in a two or more heavy angle steel frame, which forms a most rigid bed and enables Billabong Troughs to withstand rough usage and hard wear. This Troughing is easily assembled and is made in styles to suit cattle, calves, and sheep, and also a very heavy type is made for pigs. "BILLABONG" Troughing is really worth your full consideration.

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If you are interested in Windmills, get full particulars of the NEW ENCLOSED-GEAR "BILLABONG." This new Mill will prove a very profitable investment to the users of Windmill power, as the first cost will be about the only outlay needed where an Enclosed-Gear "BILLABONG" is installed. Weather influences cannot affect the working parts, and with its unsurpassed oiling system, friction and wear and tear is practically nil.

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—ARE—

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A preventive against Bunt or Smut in Wheat and Oats.

ANTI-BUNT is manufactured in powdered form and is preferable to dipping, for the following reasons:—

1. It saves time and labour.
2. The seed can be treated any time before planting, and it is not necessary to use great care in disinfecting seed containers.
3. The seed does not become wet, so there is no danger of the seed heating or sprouting if it is necessary to keep it for some time after treating. The drill does not have to be set for swollen grain.
4. Anti-Bunt does not injure the seed as liquid preparations often do.
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Whether represented by a small crystal set or an elaborate 4 or 5 valve cabinet outfit—follows the most advanced thought of wireless engineering. It is our widespread knowledge of electrical engineering, covering a period of many years, that has enabled us to select equipment that re presents the very best that modern science can offer. Practically no technical knowledge is required to operate a receiving set, and the cost is surprisingly moderate. We will gladly give instructions where needed. The experts in charge of our magnificently stocked Wireless Department will be pleased to aid you in the selection of a set that will give entire satisfaction.

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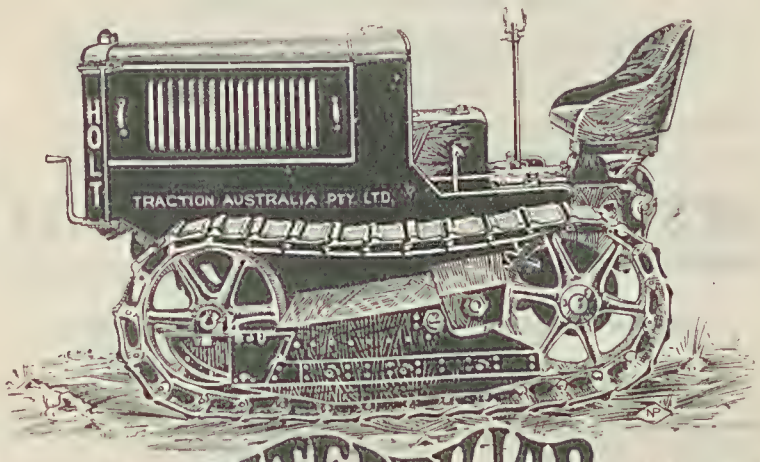
In all classes of Agricultural work, the HOLT Caterpillar Tractor fulfils the most exacting demands of the farmer. Ever ready, never tiring, and always on the job, doing its work thoroughly and at small running cost.



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the Holt "Caterpillar" Tractor is particularly serviceable—stripping the crop in a minimum of time and expenditure, thus assuring their owner against bad weather and other losses, and with its Powerful Pulley it will operate the Thresher and thus save time, labour, and money. Between seasons the Caterpillar need never be idle, for there is feed to grind, wood to saw, tanks to clean, water to pump, and many other uses particularly adaptable to this Crawler Type Tractor.

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Produce to the value of over **£30,000,000** has been treated at the **Government Cool Stores.**

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DEPARTMENT OF AGRICULTURE

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Electric motor power totals 900 H.P.

Produce can be placed on conveyors at any point and mechanically carried to any chamber in the building, or conveyed from the chambers direct into the ship's hold.

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Expert Officers are connected with every Branch, so that any one requiring information regarding the production, preparation, and shipment of produce can rely upon being promptly supplied with up-to-date information upon all matters.

YATES RELIABLE SEEDS

FOR 1925

AS the last month of the year slips by, the attention of every thoughtful farmer is centred on the planning of the New Year's work. Autumn is such an important time in the majority of districts, and early preparation so essential, that much of the work should now be in hand for the laying down of such lines as Pasture Grasses, Lucerne, and Clovers, and early green fodder crops like Oats and Barley. Sowing should take place during February and March.

With regard to Seed Supplies, those of our readers who have dealt with us in the past know that Yates Reliable Seeds give the cleanest, heaviest, and surest crops, they know that our Seeds give them far greater value for money than "cheap" seeds, and that the slight extra cost of Yates Recleaned and Tested Farm Seeds is more than repaid by the undoubted superiority of quality, growth, and strain. For 1925 we shall exercise the same scrupulous care in the selection, testing, and recleaning of Yates Reliable Seeds that has made them the choice of the leading agriculturists all over the Commonwealth.

We thank all our customers for their support this past season, and we wish them the Compliments of the Season and a bright and prosperous New Year 1925.

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DEPARTMENT OF AGRICULTURE, VICTORIA

Red Poll Dairy Herd

The Department has now completed the orders for calves that were booked ahead of calving when the advertisement was withdrawn; consequently the booking of orders for bull calves from the forthcoming calvings has now been resumed.

BULL CALVES are sold for delivery at a month old at prices based approximately on the actual milk and butter fat record of the dam at the rate of 1s. per lb. of butter *fat* yielded. Thus a calf from a cow with a 400 lbs. butter fat record is sold for 20 guineas, one from a 300 lb. butter fat cow for 15 guineas, and so on. Bull Calves *ex* heifers on their first calf are sold for a set price of 10 guineas.

(For Record of Yields of dams see Red Poll Herd Book.)

The Bulls in Use include—

VICE REGAL (95 A.A.)

Sire: Nicotine (69 A.A.). Dam: Velveteen (Imp.) 22875 (2 A.A.).

VICTORIA VOLCANO (322 A.)

Sire: Nicotine (69 A.A.) by Acton Dewstone (imp.) 9524 (4 A.A.).

Dam: Tonga (253 A.) by Honingham Archbishop (imp.) 9702 (48 A.A.).

Tonga's butter fat yields for 6 successive lactation periods are as follow:—1916, 341 lbs.; 1917, 398 lbs.; 1918, 419 lbs.; 1919, 479 lbs.; 1920, 428 lbs.; 1921, 562 lbs.

BELLIGERENT (Imported) 11096 (8 A.A.)

Dam's Record (1st milking) 7144 lbs. milk.

Dam's Dam's	,,	14533 lbs. milk	...	4	years	average	12871 lbs. milk.
Sire's Dam's	,,	10370 ,,	...	7	,,	,,	9354 ,,
Sire's D. Dam's	,,	9510 ,,	...	12	,,	,,	8033 ,,
G. Sire's D. Dam's	,,	10215 ,,	...	7	,,	,,	9386 ,,
G.G. Sire's D. Dam's	,,	12565 ,,	...	10	,,	,,	8853 ,,
G.G.G. Sire's D. Dam's	,,	10088 ,,	...	2	,,	,,	9754 ,,

Inspection of the Herd is Invited.

Visitors will be met at the Station on notifying the Manager, State Research Farm, Werribee.

Application for purchase to

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